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LAND ECONOMICS

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PLANNING, HOUSING & PUBLIC UTILITIES

1950
MAY



VOLUME XXVI
NUMBER 2

The Agricultural Significance of German Boundary Problems

By PHILIP M. RAUP*

THE Second World War brought after it a revision of many European boundaries, some formally set at Potsdam in 1945, some created *de facto* by political developments in the postwar years. Among the latter, the detachment of the Saar territory, under French hegemony, has achieved considerable publicity. None of these new boundaries, important though they may be, contains an explosive potential equal to that surrounding the Oder-Neisse Line. These two peaceful rivers have given geographers a new term and the world a combustible political problem that is not likely to improve with time. Four years after war's end the London *Economist* refers to it as "Europe's permanent festering *casus belli*," a judgment that is all too painfully supported by the facts of recent history.¹

Running almost due north and south, "from the Baltic Sea immediately west of Swinemuende, and thence along the



Oder River to the confluence of the western Neisse River and along the western Neisse to the Czechoslovakian frontier,"² the Oder-Neisse line establishes one of the world's principal demarcation lines between the East and the West, between Slavs and non-Slavs.³ Ex-

* University of Wisconsin and Bureau of Agricultural Economics, United States Department of Agriculture. From July 1945 to May 1949, the author was stationed in Berlin, on the Food and Agriculture staff of the Headquarters of General Lucius D. Clay, Office of Military Government for Germany. The views expressed are those of the author alone and should not be construed as reflecting the policies of the U. S. Department of the Army or Department of Agriculture.

¹ *The Economist*, November 26, 1949.

² Potsdam Agreement, X, B.

³ It may be objected that the western boundary of the Russian Zone of Germany is the pivot point between East and West, and not the Oder-Neisse. This may prove to be true in the future; as long as Germans inhabit the Soviet Zone the break-point in most essentials remains the Oder-Neisse.

treme claims have been made by Germans and Poles, both endowing it with a symbolic significance beyond all reason.

The dramatic food shortages of postwar Germany have made it necessary for the United States and Great Britain to support Western Germany on a scale undreamed of in 1945. Germany east of the Oder-Neisse line was predominantly a food surplus region in prewar years. For that reason the most concerted German claims made recently about the Oder-Neisse line have dealt with its disruptive effect on the future of the German food supply. To Germans, the loss of the territories east of the Oder and Neisse has engendered their postwar food shortages. It has been an easy step to the argument that there can be no permanent solution to the German food problem unless these lost territories are restored. If the United States and England truly seek to free themselves of the burden of feeding Germany, the argument runs, let them take steps to return this breadbasket area to Germany.

To the Poles, the newly acquired territories have been desired chiefly for their mineral and industrial resources. To a Germany possessed of the Ruhr, the severance of the iron, coal and mineral wealth of Silesia and the eastern territories has been a painful and crippling but not decisive loss. The Poles, on the other hand, have been more interested in Silesian coal than in the rye and potato lands of East Prussia or Pommerania. In general terms, what has been an agricultural loss to the Germans has been an industrial gain to the Poles. This is not to deny the Polish interest in the former German areas as settlement outlets for the Poles moved out of the area east of the Curzon

⁴ "Declarations of the Eight Power Conference in Warsaw, June 24, 1948," reproduced in *Poland, Germany and European Peace*, (London: The Polish Embassy, no date but 1948), p. 22.

line, acquired by Russia through the Potsdam Agreement of 1945.

To the present Polish government, and to its Russian mentors, the Oder-Neisse line is "an immovable frontier—a frontier of peace."⁴ The vehemence with which this is repeated suggests that, to the Russian satellite states, anything less than the Oder-Neisse line is an invitation to war.

The United States and Great Britain have insisted that the Oder-Neisse line is a provisional boundary, subject to final determination in the treaty of peace with Germany.⁵ These assertions have fallen on receptive German ears and have been interpreted to mean that the Western powers are potential supporters of German claims for a return of at least part of the lost territories. Whether or not this is the intention, west German politicians and the west German press have lost no opportunity to remind the Western Powers of their position in the dispute.

Origins of the Oder-Neisse Line

The heated atmosphere in which the East and the West have developed their postwar policies toward Germany has obscured the origins of the Oder-Neisse line. It was agreed to in principle at Yalta; it was formalized at Potsdam. This much is generally known. What is not so generally realized is that the locus of the Polish western boundary was outlined in broad terms at least as early as November 1944, and the roots of this agreement go even further back into the wartime period.

Three key facts played a role in the ultimate delineation of the boundaries of postwar Poland. In the first place, Great Britain went to war when Poland was invaded. British sentiment in favor of a

⁵ This was explicitly reaffirmed by Secretary of State James F. Byrnes in his restatement of United States policy toward Germany at Stuttgart on September 6, 1946.

strong and free Poland was great throughout the war, and it found one of its strongest supporters in the person of Winston Churchill. The second and related fact was that Great Britain gave succor to the Polish emigre government, enrolled thousands of Poles in the British armed forces, and was a major supporter of the Polish underground. The third and disturbing development came with the advance of Russian armies into Poland and the establishment of the competitive Lublin Government. The Russians insisted that they had to insure their supply lines preparatory to the final onslaught against Germany.

One of the critical issues raised at the Teheran conference concerned Russian demands that she be ceded territory in eastern Poland up to (or beyond) the Curzon line, including the city of Lwow. In reporting to the Parliament on this conference, Prime Minister Churchill said on February 22, 1944:

"I took occasion to raise personally with Marshall Stalin, the question of the future of Poland. . . . Here may I remind the House that we ourselves have never in the past guaranteed, on behalf of His Majesty's Government, any particular frontier line to Poland. We did not approve the Polish occupation of Vilna in 1920. The British view in 1919 stands expressed in the so-called Curzon line. . . . I have an intense sympathy with the Poles, . . . I also have sympathy with the Russian standpoint. . . . I cannot feel that the Russian demand for a reassurance about her western frontier goes beyond the limits of what is reasonable or just. Marshall Stalin and I also spoke and agreed upon the need for Poland to obtain compensation at the expense of Germany both in the North and in the West."⁶

Throughout 1944 the question of Poland agitated British policy makers who were attacked in their home press for failure to reach agreement with the

Russians about the future of the London Polish government-in-exile and about the frontiers of postwar Poland. The Prime Minister, on December 15, 1944, discussed these issues in an explicit statement of British policy:

"I cannot accept the view," he said, "that the arrangements which have to be proposed about the frontiers of the new Poland are not solid and satisfactory, or that they would not give to Poland that abiding home of which I spoke to the House in February. If Poland concedes Lwow and the surrounding regions in the south on the line known as 'Curzon Line A,' if she makes this concession and these lands are joined to the Ukraine, Poland will gain in the north the whole of East Prussia west and south of Koenigsberg, including the great city and port of Danzig, one of the most magnificent cities and harbours in the world, famous for centuries as the great gathering place of the trade of the Baltic, and, indeed, of the world. Instead of the threatened and artificial corridor which was built so laboriously after the last war, Poland will stretch broadly along the Baltic on a front of over 200 miles.

"The Poles are free, so far as Russia and Great Britain are concerned, to extend their territory at the expense of Germany to the West. I do not propose to go into exact details, but the extensions, which be supported by Britain and Russia, are of high importance. Thus they gain in the west and north territories more important and highly developed than they lose in the east

"The transference of several millions of people would have to be effected from the east to the west or north, and the expulsion of the Germans, (because that is what is proposed—the total expulsion of the Germans) from the area to be acquired by Poland in the west and north. For expulsion is the method which, so far as we have been able to see, will be the most satisfactory and lasting. There will be no mixture of populations to cause endless trouble as in Alsace-Lorraine. A clean sweep will be made. I am not alarmed at the prospect of the disentanglement of populations, nor am I alarmed by these large transferences, which are more possible in modern conditions than they ever were before. . . ."⁷

⁶ 397 H. C. Deb., 5s (Hansard), col. 698.

⁷ 406 H. C. Deb., 5s, cols. 1483-84, December 15, 1944.

These statements⁸ were made prior to the Yalta conference. Preceding this speech to the House of Commons two important commitments had been made regarding the question of Polish boundaries. On November 2, 1944, Sir Alexander Cadogan, Permanent Undersecretary to the British Foreign Office, had addressed a letter to Tadeusz Romer, Foreign Minister in the London Polish government-in-exile, in which he stated:

"... You put to me three questions for the consideration of His Majesty's Government.

"The Prime Minister, after consultation with the Cabinet, has now directed me to give you the following replies.

"You asked in the first place whether, even in the event of the United States Government finding themselves unable to agree to the changes in the western frontier of Poland foreshadowed in the recent conversations in Moscow, His Majesty's Government would still advocate these changes at the Peace Settlement. The answer of His Majesty's Government to this question is in the affirmative.

"Secondly you enquired whether His Majesty's Government were definitely in favour of advancing the Polish frontier up to the line of the Oder, to include the port of Stettin. The answer is that His Majesty's Government do consider that Poland should have the right to extend her territory to this extent.

⁸ The speech caused trouble in Washington. Discussing it in his book, *Roosevelt and Hopkins* (New York: Harper and Brothers, 1948), Robert E. Sherwood said (p. 842): "... the debate on Poland in the House of Commons caused further serious ructions. Speaking of the future Polish frontiers, Churchill said, 'All territorial changes must await the conference at the peace table after victory has been won, but to that principle there is one exception, and that exception is, changes mutually agreed.' This was an unfortunate misstatement on Churchill's part which was later corrected by Eden, but it conveyed the disturbing suggestion of 'secret agreements' among the big powers for carving up the small ones. . . ."

⁹ This letter is printed in full in, *Poland, Germany and European Peace*, *op. cit.*, pp. 105-06. It apparently is not available in documents released to date by the British Foreign Office. Its existence was confirmed by Foreign Minister Bevin in answer to a question in the House of Commons on June 4, 1947, (438 H. C. Debts., 5a, cols. 178-79), but he added: "I see no advantage in singling out this letter for special publication." For a German rebuttal to these

"Finally you enquired whether His Majesty's Government would guarantee the independence and integrity of the new Poland. To this the answer is that His Majesty's Government are prepared to give such a guarantee jointly with the Soviet Government."¹⁰

A few days after Sir Alexander Cadogan's letter, President Franklin D. Roosevelt also addressed a letter to Prime Minister Mikolajczyk, head of the London Polish Government, in which he stated, in part:

"1. The United States Government stands unequivocally for a strong, free, and independent Polish State with the untrammelled right of the Polish people to order their internal existence as they see fit.

"2. In regard to the future frontiers of Poland, if mutual agreement on this subject including the proposed compensation for Poland from Germany is reached between the Polish, Soviet, and British Governments, this Government would offer no objection. In so far as the United States guarantee of any specific frontiers is concerned I am sure you will understand that this Government, in accordance with its traditional policy, cannot give a guarantee for any specific frontiers. . . .

"3. If the Polish Government and people desire in connection with the new frontiers of the Polish State to bring about the transfer to and from territory of Poland of national minorities, the United States Government will raise no objection and as far as practicable will facilitate such transfer."¹¹

Finally, in reporting the Yalta Conference to the House of Commons, on

documents see, Friedrich Hoffman, *Die Oder-Neisse Linie*, (Frankfurt: Verlag Joachim Heinrich K. G., 1949), in which it is argued that the expulsion of the German population does not create a *fait accompli*, and the ultimate status of the Oder-Neisse Line is yet to be determined under international law.

¹⁰ See, *Poland, Germany and European Peace*, *op. cit.*, pp. 107-08. As far as is known, this letter is not elsewhere reproduced but there seems little reason to question its authenticity. It should be noted here that both British and United States representatives felt, prior to the Yalta conference, that too much former German territory was being demanded by the Lublin Polish government, which had demanded the Oder-Neisse line for its western boundary. See, Edward R. Stettinius, Jr., *Roosevelt and the Russians* (New York: Doubleday & Company, Inc., 1949), pp. 41, 64, *et seq.*

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February 27, 1945, Prime Minister Churchill revealed that:

"I now come to the most difficult and agitating part of the statement which I have to make to the House—the question of Poland

"In supporting the Russian claim to the Curzon line, I repudiate and repulse any suggestion that we are making a questionable compromise or yielding to force or fear, and I assert with the utmost conviction the broad justice of the policy upon which, for the first time, all the three Great Allies have now taken their stand. Moreover, the three Powers have now agreed that Poland shall receive substantial accessions of territory both in the North and in the West. In the North she will certainly receive, in the place of the precarious Corridor, the great city of Danzig, the greater part of East Prussia West and South of Koenigsberg and a long, wide sea front on the Baltic. In the West she will receive the important industrial province of Upper Silesia and, in addition, such other territories to the east of the Oder as it may be decided at the peace settlement to detach from Germany after the views of a broadly based Polish Government have been ascertained."¹¹

On November 2, 1944, the Cadogan letter had specified the Oder River and the port of Stettin as a northwestern Polish boundary that would be supported by Great Britain. Prime Minister Churchill, reporting on the Yalta Conference, had added that Poland would receive the German province of Upper Silesia, thus defining an approximate southwestern locus of the boundary. The subsequent Oder-Neisse line is the outgrowth of these preliminary specifications. The various statements quoted above leave little doubt that the western Polish boundary, in substantially its present form, was agreed upon in general terms by the three heads of the mentioned governments at the Yalta conference. Regardless of subsequent conflicts, the later

delineation of the Oder-Neisse line in the Potsdam Agreement was apparently not considered by Prime Minister Atlee and President Truman as a subject worth an open conflict with Marshal Stalin.¹² Although the United States and Great Britain insisted that the final boundary determination should await the peace conference, their later acquiescence (in the Allied Control Council) to the expulsion of the German population from east of the Oder-Neisse line implies that the western powers accepted the line as a *fait accompli*.

Food Productive Capacity East of the Oder-Neisse Line

The area east of the Oder-Neisse line in 1939 contained 13.7 percent of the total population, 24.1 percent of the total area, and 25.1 percent of the total agriculturally-used land in the old Reich. It contained 30.5 percent of the horses 20.4 percent of the cattle, and 23.5 percent of the hogs. It accounted for about 29 percent of the total area planted to food and fodder grains, 30 percent of the area in potatoes, 27 percent of the sugar beet hectarage, and about the same percentage of "other crop-land." It was predominantly an agricultural area with few large cities although with comparatively rich mineral deposits and significant industrial development, particularly in Silesia. Its loss by the German economy has been important, although frequently over-estimated. In the prewar Reich this area was a comparatively sparsely settled region. See Table I.

TABLE I—POPULATION DENSITIES EAST AND WEST OF THE ODER-NEISSE, 1939
(Persons per square Kilometer)

Based on:	East of O-N	West of O-N
Total Area	84.3	166.1
Agr.-Used Land Only.....	133.1	277.1

Byrnes points out that: ". . . We specifically refrained from promising to support at the German Peace Conference any particular line as the western frontier of Poland . . . To

(Footnote 12 continued on page 108)

¹¹ 408 H. C. Deb., 5s, col. 1267.

¹² Discussing the Potsdam conference in his book, *Speaking Frankly*, (New York: Harper and Brothers, 1947), James F.

In 1939 each German resident east of the Oder-Neisse line could draw upon 0.75 hectares of agriculturally-useable land for his food; his compatriot west of the line had only 0.36 hectares available.¹³ The area east of the line had for generations been the settlement frontier in Germany as well as the home of large estates and of large-scale agriculture. It was a region in which big farms, dependent on large labor forces and frequently on migratory labor, set the agricultural tone. It was productive, and what was more important, its produce came on the market. With relatively few industrial centers and with high transportation costs, agriculture in this region was forced to concentrate on marketable crops that could be transported long distances. Its principal grain crop was rye, and it contributed more than its proportionate share of the Reich's potatoes and sugar beets. For this reason it has frequently been claimed that this area could feed itself and many millions of western Germans. In the postwar atmosphere these claims have often been exaggerated and it is of importance to set forth here as accurate a

(Footnote 12 continued from page 105)

remove even an excuse for Poland or the Soviet Union to claim that the line had been established or that there was any promise to support a particular line, the Berlin Protocol declared: 'The three heads of government reaffirm their opinion that the final delimitation of the western frontier of Poland should await the peace settlement.' In the light of this history it is difficult to credit with good faith any person who asserts that Poland's western boundary was fixed by the conferees, or that there was a promise that it would be established at some particular place." (p. 81)

¹³ One hectare equals 2.471 acres.

¹⁴ See, for example, G. W. Harmsen, *Reparationen, Sozialprodukt, Lebensstandard* (Bremen: Friedrich Truejen Verlag, 1948, p. 37), in which the figure is set at 7 million; Hugo von Oertzen, *Ernährungsleistung Ost-Deutschlands* (Hamburg: Noelle Verlag, 1948), p. 21, in which the figure is set at 5.9 million persons; this latter estimate is also contained in, "The Agricultural Significance of the Area East of the Oder-Neisse Line," *Europa-Archiv*, May 1947, p. 582. On the other hand, the German Institute of Economic Research set the figure at 4.5 million; see *Die Deutsche Wirtschaft Zwei Jahre Nach dem Zusammenbruch*, (Berlin: Deutsches Institut für Wirtschaftsforschung, 1947), p. 10.

¹⁵ A long article appearing in *Die Zeit*, Vol. 2, No. 13, Hamburg, April 10, 1947, claimed that the food produced and not consumed east of the Oder-Neisse would have

statement as can be prepared regarding the food productivity of this region.

Numerous responsible German publications have made claims that this area fed itself and from five to ten million or more western Germans prior to the war.¹⁴ Most of these estimates are based on highly schematic assumptions and leave much room for statistical argument. Germany east of the Oder-Neisse line was an integral part of prewar Germany. The line does not conform with any political boundaries that have existed in modern history. There was no reason to collect or to report statistics on food productivity east of this line; and their reconstruction after the war can be accomplished only on the basis of numerous assumptions, all of which can be prejudiced and variously interpreted at the will of the author. Although several surveys of this region have appeared, there has been no thoroughly documented study to date that will permit a definitive rejection of the extravagant claims made regarding it.¹⁵ The study by von Oertzen, cited above, reduces all foodstuffs to their "grain value" equivalent.¹⁶ By using this grain equivalent

fed 9.3 million persons in western Germany, at a ration level of 2860 calories per day. The data supporting this article are virtually identical with those contained in a series of publications that appeared in the British Zone during the latter part of 1946, in both English and German, purporting to prove that solution of the German food problem is impossible without return of the area east of the Oder-Neisse. See, *Agriculture and Forestry in East Oderland* (no author or publisher given), Hannover: Goehrmann Verlag, 1947 and *Ackerbau, Viehzucht, Forstwirtschaft in Schlesien* (no author or publisher given), printed by Georg Westermann, Braunschweig, September 1946. This latter publication concludes that, "Western Germany could cover up to 25% of its actual requirements in agricultural consumption goods through the surpluses of the German east" (p. 43). Assuming the prewar population of 58.8 million west of the Oder-Neisse, this statement would seem to claim that Germany east of the Oder-Neisse fed itself and in addition supplied the total requirements for almost 15 million western Germans—certainly a high-water mark in extravagant claims made about the surplus food productivity of the area.

¹⁶ A unit of wheat or rye is taken as the standard, and other field crops related to it; livestock products are converted at their value in terms of the fodder (in grain values) required to produce them. For a more detailed discussion of this "grain value" denominator see E. Woermann,

(Footnote 16 continued on page 107)

multiplier an annual average per capita consumption is developed in the area concerned, and the non-consumed remainder is considered as available for western Germany. The figure of 5.9 million is obtained by dividing the surplus production of the Oder-Neisse area, expressed in grain-values, by the average west-German per capita consumption (also in grain values) prior to the war. This method is reasonably accurate although subject to influence through the choice of multipliers used in determining the grain-value denominators, and the food consumption levels.

The Food and Agriculture Group of the United States Office of Military Government for Germany (hereafter OMGUS) attempted in 1947 to develop statistics on the importance of the Oder-Neisse line, using production statistics and the records of rail and other transport movements.¹⁷ This method avoids one of the most serious deficiencies of other estimates in that it does not involve an assumption that everything surplus to internal consumption east of the Oder-Neisse line did actually move to the west. In the other estimates cited, the surplus production of eastern Germany appears as an end result after home consumption and the "import-export" balance are considered. As a consequence, all of the intangible factors—the shrinkages and losses in processing, storage, and transportation, plus the economic costs of these functions—are left out of the calculations. The OMGUS study, in which total production east of the Oder-Neisse was reduced to calories, concluded that the area produced for human consumption in

1935-38 a total of "about 15.5 trillion calories annually. Its population of 9.6 million consumed 11.0 trillion calories leaving for export to Germany as presently bounded 4.7 trillion calories which was sufficient to feed 4.5 million persons 2910 calories per capita per day." In short, in prewar years the area east of the Oder-Neisse supplied food for some 14.1 million persons.¹⁸

Most discussion of the food surplus produced east of the Oder-Neisse overlooks one basic fact. This area produced predominantly grains, potatoes, and sugar. It was also the most important hog surplus area in Germany. Its proportionate contributions, however, of other livestock products, of milk and milk products and of fish and eggs were significantly below its contribution of carbohydrate foods and of pork. Although its milk production was approximately 25 percent of that of the Reich as a whole, and of meat about 10 percent, the calories derived from these sources and *outshipped to western Germany* accounted for only 508 billion calories, or less than 12 percent of the total calories exported to western Germany.¹⁹ The calories sent west were primarily carbohydrate calories and failed by far to reach a qualitative importance in total German food production often assumed to exist on the basis of the fact that this area accounted for 25 percent of the agriculturally-used land.

A second fact that has contributed to error in reporting the surplus production of the area east of the Oder-Neisse is that per capita food consumption in that area, as befits a rural region, was above that of the remaining Reich. Use of

(Footnote 16 continued from page 106)
 "Ernährungswirtschaftliche Leistungsmaßstäbe," *Mitteilungen fuer die Landwirtschaft*, September 2, 1944.

¹⁷ See, *The Basic Structure of Prewar German Food and Agriculture Economy and the Relation of the Area East of Oder-Neisse Line*, OMGUS, Economics Division, Food and Agriculture Branch, Berlin, May 1947. Two men were primarily

responsible for this study: Dr. Vladimir Timoshenko, then on leave from the Food Research Institute, Leland Stanford University, and Mr. Gwynn Garnett, now Chief, Food and Agriculture Division, Office of the United States High Commissioner for Germany.

¹⁸ *Ibid.*, p. 14.

¹⁹ *Ibid.*, pp. 8, 11, and 14.

Reich-wide rates of home consumption to compute the food consumed locally east of the Oder-Neisse understates the local disappearance and overstates the potential availability for western Germany.

Any attempt to reduce all foods to a common denominator, whether calories, grain equivalent, starch values, or tons, must struggle with the confusing fact that foods are not alike. Since the area east of the Oder-Neisse line was a great calorie producer, particularly in grains, sugar, and potatoes, almost all of the estimates of its surplus production stumble on the question of converting these calories or grain values into a standard that permits comparison with western Germany. The inevitable consequence is that all measures of food production in eastern Germany overstate its contribution to a nutritionally balanced diet. This overstatement need not be distorting if consideration also is given to the fact that the food surplus of eastern Germany, if transported west, would fill primarily the carbohydrate requirements of a western diet. These foods would face import competition from grains and sugar—the very foodstuffs that western Germany can today import to best advantage. Viewed in this light, one aspect of the issue thus becomes: Could western Germany in the long run best cover its protein and fat requirements by converting through livestock the carbohydrates produced east of the Oder-Neisse? If not, what emphasis should be placed on importation of grains, feeds, fats and oils from world market sources? There is no easy answer. One of the unknown factors is the ability of the former eastern German territories to realign their agricultural economy in keeping with postwar requirements. Their prewar performance affords the only objective data and these data are not encouraging.

It is argued that it is immaterial

whether the grains, potatoes, and sugar were shipped west or whether they were retained east of the Oder-Neisse and marketed through livestock. Provided the proper multiplier is used, the argument continues, to convert livestock into "grain values" or "starch equivalents," all is well.²⁰ The fact remains that the surplus potatoes were converted to alcohol in large quantities, the grains were not fed to livestock east of the Oder-Neisse on a scale comparable to that in western Germany, and this area did not contribute proportionately to Germany's demand for livestock products, save for pork. Its system of agriculture did not emphasize livestock farming, with its intensive land use and labor demands. The intensive production of livestock products made demands on the structure of farming that eastern Germany was not equipped to meet. From the standpoint of total food production, and the total national effort required to produce it, it is certainly a matter of economic importance that prewar eastern Germany did not convert its grains, potatoes and fodder crops to livestock products in large quantity, and did leave the task of doing so to the west of Germany.

The differences in farm organization and in labor requirements between eastern and western Germany deny the glib use of a "grain equivalent" or "starch-value" denominator if the real costs of the nation's food production are involved. A ton of pork and five tons of grain are equivalent only if no regard is taken of the relative production costs involved. It is a cardinal weakness of much agricultural economic thinking in Germany that these comparisons continue to be made with no regard for costs.

Prewar Sources of Food for Germany

A more significant picture of German indigenous agricultural productivity, for

²⁰ See, for example, von Oerzen, *op. cit.*, p. 16.

the Reich as a whole and the area east of the Oder-Neisse line, is presented in Table II.

Considering total food availability in prewar Germany, including home production and imports of foods and feed-stuffs, the relative role played by the area east of the Oder-Neisse declines. This is exhibited clearly in Table III which shows the prewar food sources of present Germany, west of the Oder-Neisse line.

In the prewar period Germany, as presently bounded, received (in calorie units) 10 percent of its flour, food cereals and pulses, 18 percent of its sugar, 13 percent of its cheese, and 6 percent of its potatoes from east of the Oder-Neisse line. On the other hand, it received only 8 percent of its meat, 2.3 percent of its fat, 0.9 percent of its whole milk, 3.0

percent of its eggs, and little or no fish from that area. Were foods from east Germany in these same quantities and varieties available in Germany west of the Oder-Neisse today, they would supply nearly eleven million persons with their sugar, but only one-half million with their whole milk at the respective prewar levels of consumption in the rump Reich. Table IV shows these wide variations in the numbers of people who were dependent on the area east of the Oder-Neisse for different types of foods in the prewar years. The great differences in these figures illustrate clearly how misleading it can be to make sweeping statements regarding the number of people who could be fed from the food surplus of eastern Germany.

All of the measures of production discussed above have been couched in

TABLE II—GERMANY: SHARE OF TOTAL AVAILABLE INDIGENOUS FOOD PRODUCED EAST OF ODER-NEISSE LINE

(Average of 1935-38)¹

FOOD	Total Old Reich	East of Oder-Neisse Area	
	Billion Calories	Billion Calories	% of Reich Total
Flour, bread grains and pulses, for food..... (for beverages).....	25,960 (2,230)	6,990 (235)	26.9 10.4
Potatoes, food..... (alcohol).....	9,543 (1,462)	2,370 (931)	24.8 63.7
Sugar.....	6,784	1,756	25.9
Meat, excl. slaughter fat.....	6,145	1,309	21.3
Fat, commercial.....	7,668	1,678	21.9
Milk, whole..... skim.....	4,810 470	779 83	16.4 17.7
Cheese.....	607	150	24.7
Fish and Eggs.....	1,013	159	15.7
Total, for food..... for beverages.....	63,000 3,692	15,274 1,166	24.2 31.6
Total potential availability from indigenous production ²	66,692	16,440	24.6

¹ *The Basic Structure of Pre-War German Food and Agriculture Economy and the Relation of the Area East of Oder-Neisse Line*, op. cit., p. 6.

² Including livestock products produced internally from imported feeds.

TABLE III—STRUCTURE OF PREWAR FOOD ECONOMY OF GERMANY AS PRESENTLY BOUNDED.¹
(Based on 1935-38 Average Indigenous Production and Imports, and on Statistics of Shipments from Area East of Oder-Neisse in 1937)

FOOD	Indig. Prod.	Imported Food		Total avail- able for Con- sump- tion	Percent of Total Available for Consumption			Total
		from abroad	from Eastern Area		from Indig. Prod.	From Abroad	Imports Eastern Area	
		Trillion Calories	Percent					
Total Flour, Food Cereals, Pulses.....	19.0	3.24	2.32	24.5	77.3	13.2	9.5	22.7
Less Change in Stocks of Breadgrains (in terms of Flour).....	1.5	.....	.....	1.5	100.0	.....	.....	.....
Total Flour, Food Cereals & Pulses available for Consumption.....	17.5	3.24	2.32	23.0	75.9	14.0	10.1	24.1
Potatoes.....	7.2	0.06	0.44	7.7	93.6	0.7	5.7	6.4
Sugar.....	5.0	.....	1.12	6.1	81.8	.....	18.2	18.2
Meat excl. slaughter fat.....	4.8	0.35	0.47	5.6	85.5	6.2	8.3	14.5
Fish.....	0.4	0.13	.....	0.5	73.0	27.0	.....	27.0
Fat, commercial.....	6.0	5.80	0.28	12.1	49.7	48.0	2.3	50.3
Whole Milk.....	4.0	0.01	0.04	4.1	98.8	0.3	0.9	1.2
Cheese.....	0.5	0.08	0.08	0.7	74.1	13.1	12.8	25.9
Skim Milk.....	0.4	.....	.....	0.4	100.0	.....	.....	.....
Eggs.....	0.5	0.12	0.02	0.6	77.8	19.2	3.0	22.2
Other Foodstuff.....	1.8	0.80	-0.04	2.6	70.3	31.2	-1.5	29.7
Total Food.....	48.1	10.59	4.73	63.4	75.8	16.7	7.5	24.2
Feed ².....	.....	7.9	1.3	.....	.....	.....	.....	.....

¹ The Basic Structure of Prewar German Food and Agriculture Economy and the Relation of the Area East of Oder-Neisse Line, op. cit., p. 10. The computations in the table were based on an assumed 1939 population of 59,700,000 persons in that area now making up present Germany.

² The 9.2 trillion calories are equal to about 3,000,000 metric tons, in grain equivalent.

physical terms. This is fashionable in postwar Germany and in fact has been necessary because of the complete unreliability of any comparisons based on monetary value. If value comparisons could be made, it is clear from the above

TABLE IV—NUMBER OF PERSONS IN RUMP GERMANY WHO COULD HAVE BEEN SUPPORTED AT PREWAR CONSUMPTION LEVEL BY FOODS SHIPPED WEST FROM ODER-NEISSE AREA IN 1937¹

FOODSTUFF	Imported Food from Eastern Area	in cal. p. cap-day		Persons fed from Eastern Imports
		Trillion Cal.	Cal.	
Total Flour, Food, Cereals & Pulses avail. for Consumption.....	2.32	1,059	386,535	6,002
Potatoes.....	0.44	353	128,845	3,415
Sugar.....	1.12	280	102,200	10,959
Meat excl. al. fat.....	0.47	260	94,900	4,953
Fat commercial.....	0.28	555	202,575	1,382
Whole Milk.....	0.04	187	68,255	586
Cheese.....	0.08	28	10,220	7,828
Eggs.....	0.02	29	10,585	1,889
Other Foodstuffs.....	0.04	118	43,070	929
TOTAL FOOD.....	4.73	2,910	1,062,150	4,453

¹ Computed from The Basic Structure of Prewar German Food and Agriculture Economy and the Relation of the Area East of Oder-Neisse Line, op. cit., Table 9, page 10.

that eastern Germany excelled in the production of foods having a relatively low value-weight ratio. If the value of food products were taken as a standard, the significance of the area east of the Oder-Neisse line would drop perceptibly because of the relatively high value of the livestock and horticultural products, fruits, and vineyard products whose production was concentrated in the western and southern parts of Germany.

An attempt was made by a League of Nations' Study Group to place European agricultural comparisons on a currency-value basis that would enable international comparison in modified value terms and independent of the currency units concerned.²¹ This study made use of a "Crop Basket" technique developed by Dr. Adolf Kozlik, and explained as follows:

"The Crop Basket. A crop basket has been selected that is made up of one quintal (100 kilograms) of the six most important European crops in the proportion of their total European production during the 1931-1935 period. The composition of this crop basket is as follows: 16 kg. wheat, 9 kg. rye, 6 kg. barley, 10 kg. oats, 6 kg. maize, 53 kg. potatoes, (total) 100 kg.

"Price Data. The price of a crop basket in each country is next computed. This by definition is the price of one quintal of the selected group of crops determined by weighting each individual crop price by the proportion of the European crop basket represented by that crop. The unweighted price of each agricultural product, whether contained in the basket or not, is then expressed in terms of its ratio to the sum of the weighted prices of all the products contained in the crop basket."²²

Using the "international Crop Unit" developed on the basis of this Kozlik method, tables were prepared showing the European agricultural net production in Crop Units for the period 1931-

35. Although this period does not include the four prewar years in which Germany made its greatest strides toward food self-sufficiency, and would therefore present a somewhat distorted picture for the comparison of prewar Germany with other countries, it does permit a usable comparison internally between the area east of the Oder-Neisse line and the rump Reich, as shown in Table V.

TABLE V—AGRICULTURAL NET PRODUCTION IN "INTERNATIONAL CROP UNITS" Germany, 1931-35
(By Postwar Zones of Occupation)¹

Zone	Net Agr. Units	Production ("Crop Units")	Percent of Total
Area East of O-N.....	248,500	.... 22.3	
Soviet Zone.....	263,200	.... 23.7	
British Zone.....	264,900	.... 23.8	
U. S. Zone.....	239,900	.... 20.6	
French Zone.....	96,200	.... 8.6	
TOTAL GERMANY.....	1,112,700	.... 100.0	

¹ The zonal division of the data has been accomplished by the use of a statistical key based on the total area of agriculturally usable land in the parts of former *Laender* and Provinces now contained in the respective zones. Since the data in the original table presented by Moore are given by *Laender* and Prussian provinces, the errors resulting from the use of this key are small.

One of the surprising facts shown in this table is that the British Zone, and not the Soviet Zone or the area east of the Oder-Neisse, was the largest prewar producer of agricultural products, if both values and quantities are considered.

The percentage distribution of total food production, in weighted value terms (International Crop Units), shown by Table V sets forth the over-all role played by the area east of the Oder-Neisse in a manner not permitted by data based on calories, starch value, or other measures expressed in physical quantities. Although an important food-producing area, with over 25 percent of the total agriculturally-used land in the old Reich, the area east of the Oder-

²¹ Wilbert E. Moore, *Economic Demography of Eastern and Southern Europe*, (League of Nations, Princeton University Press, 1945).

²² *Ibid.*, pp. 155-156. For a more complete explanation of this method consult pp. 145-180 of the study.

Neisse failed to maintain this relative position if the real value of the food to the economy is taken into consideration. It may be objected that in a hungry Germany attention cannot be concentrated on the value of food but must be centered on the calories or quantities made available. For certain purposes this can be conceded. Nevertheless, effort and resources are required to produce food. No economy can long ignore completely the magnitude of this national effort required. The relative levels of agricultural prices in Germany have long been unrepresentative of the extent of that effort. Yet values and costs of production cannot be kept out of consideration.

The Indispensable East

A popular argument in present-day Germany is that it is not only the quantities of food from east of the Oder-Neisse that were important to western Germany but in particular the quality and indispensable nature of certain of that area's products. The fact that most of prewar western Germany's seed potatoes came from east of the Oder-Neisse is cited as irrefutable evidence that western German agriculture cannot remain productive without the constant renewal of disease-free seed potato stocks from the east.

"The west and south of Germany," it is argued, "as agricultural practice again and again confirmed, is unquestionably forced to dependence upon the import of seed potatoes from the East. If these supplies fail, the potato harvest in western and southern Germany, in spite of the planned expansion of the crop area, will continuously decline and will never be able to meet the requirements of the population for eating potatoes."²²

The experience of the past two years explicitly refutes this argument. Cut off from any seed potato supplies from

east of the Oder-Neisse since 1945 (and in general from the Soviet Zone as well), the farms of the three western zones produced in 1948 their record potato harvest, with yields in most areas higher than ever before recorded. In 1949 the yields dropped somewhat but were markedly above the high prewar yields of 1935-38.²⁴ Western Germany has been fully self-sufficient in potatoes for two years past, thereby removing a major protestation regarding the indispensable nature of the eastern territories.

The foods produced east of the Oder-Neisse were the relatively less-valuable foods, reflecting their relatively lower costs of production. They were also composed of large quantities of grains and sugar, commodities that were highly protected in the prewar German economy. That area was the area most readily affected by world price movements and most in need of subsidization to maintain its productive levels. These subsidies were believed justified by Nazi Germany, in its preparation for war. Their continuation might also have been justified in the immediate postwar period, had that area been retained within Potsdam Germany. Eventually the artificial stimulation of the eastern German agricultural economy would have had to be re-examined to determine whether and to what extent it was actually wise to continue its subsidization.

It is clear, beyond all possible doubt, that the area east of the Oder-Neisse would not have contributed as much food to western Germany in the years since the war as it had in prewar years, even if it had not been separated from the rump Reich. Agricultural production in the east of Germany depended on heavy applications of commercial fertilizer which has been in short supply

²² Ackerbau, Viehzucht, Forstwirtschaft in Schlesien, *op. cit.*, p. 28.

²⁴ See, in this connection, Philip M. Raup, "Postwar Agricultural Recovery in Western Germany," *Journal of Farm Economics*, February 1950.

even in the reduced area of the west. The prewar labor supply consisted of a large percentage of German youth, impressed into labor battalions, plus foreign or migratory farm workers, chiefly Polish. During the war the impressed semi-slave laborers from countries overrun by Germany were used to keep this area in production. Both labor supply sources would have failed after the war. The transport system was also seriously disrupted, particularly in the East. All these considerations, and many others, make it very doubtful whether the area east of the Oder-Neisse would have had any net food surpluses whatsoever to contribute to western Germany in these postwar years, even if it had been retained as a part of the economy of the Reich. This factor is commonly ignored in all discussions of the contribution to German food production made by the area east of the Oder-Neisse. Admitting that the food surpluses of that region were a valuable addition to the German food supply, admitting that their loss to the postwar German economy has had serious consequences, it is none the less true that the importance of this loss is repeatedly being over-estimated. It is by no means clear that Germany, in the long run, could afford to continue the measures of agricultural protection and food autarky that were necessary to keep that area in full production.

Throughout the war the burden of supporting the eastern territories created strains for the German economy. One of the most serious problems was the eastern rail transport system that had required continuous subsidy from the rest of Germany. Military considerations and the eastern colonization policies of successive German governments had dictated a system of rail rate differentials to favor the east. In reviewing this policy during the war Paul Schulz-Kiesow

pointed out that: "The distressed condition of agriculture in the old and new east is so precarious that after the end of the war immediate emergency measures will be necessary."²⁵ He urged the adoption of special freight rates for the eastern territories to aid "the agriculture of eastern Germany, [which is] suffering so greatly from its distance from market."²⁶ Although it affords scant comfort to western Germany, which is mourning the loss of its eastern territories, it is nevertheless true that the return of these territories would require the resumption of subsidies and capital investments that would strain severely the struggling economy of the remainder of the country.

Whether or not four million, five million, or seven million persons in the area of present Germany were fed in the prewar years through food surpluses from the eastern territories is not a particularly relevant question at the moment. As shown in Table III, about forty-eight trillion calories were produced annually in the years 1935-38 in Germany as presently bounded. At the prewar consumption rate of 2,910 calories per capita per day, this would have supplied between forty-five and forty-six million persons with a prewar diet. There are today some sixty-seven million persons in that same area, about twenty-two million more than could have been fed from indigenous production in 1935-38. If the top prewar production levels could be reached, present Germany would still be forced to look outside her boundaries for food for over twenty-one million people. Were the food surpluses from the area east of the Oder-Neisse available to present Germany at full prewar levels,

²⁵ "Die Bedeutung der Gütertarifpolitik der Deutschen Reichsbahn Als Mittel zur Überbrückung der Marktferne der Landwirtschaft des alten und des neuen Ostens," in *Raumforschung und Raumordnung* (Berlin, Kurt Vowinkel Verlag, Vol. 8, No. 1, 1944), p. 21.

²⁶ *Ibid.*, p. 20.

the best estimate is that this might at most supply the food for some five millions now resident in the four zones of occupation. If all Germans once resident east of the Oder-Neisse line were to return there would still remain six to eight million persons in western Germany dependent on imports for their food supply.

It is obvious that the statements above are broad generalizations. They are supported by data; but these data, although the best available, are far from perfect. Nevertheless, if the restoration of prewar boundaries and the return of expelled populations would reduce present food import requirements by two-thirds, a strong argument could be made for boundary readjustments. The purpose of the arguments presented here has been to point out the complex nature of the problem and to question the assumptions that underlie the claims now being made.

Loss of the eastern territories has greatly complicated the problem of food supply for defeated Germany. Return of these territories would certainly not solve the present food problem, unless it is assumed that there will be no territorial readjustments to favor Poland, that all Germans once resident east of the Oder-Neisse would return, and that that area would be subsidized and protected to a degree that would return it to its prewar levels of production. Each of these assumptions appears unrealistic in the extreme in 1950.

Hope of the full return to Germany of the total area east of the Oder-Neisse line appears to be a political fantasy indulged in only by the more irresponsible elements in postwar Germany. A possibility exists, however, that the Communist desire to win political advantage in Germany may lead to a Russian at-

tempt at boundary readjustments, when in Russian opinion the maximum political advantage can thereby be achieved. It is unlikely that Russo-Polish control of the mouth of the Oder would be surrendered under any foreseeable circumstances. It is equally unlikely that the Russians will be tempted to go so far as to return the coal and other mineral resources of Upper Silesia to German hands. Some realignment, however, in that southern part of the present boundary formed by the western Neisse has almost certainly been discussed in Russian-Polish circles at the insistence of German Communists who are aware of the political magic they might thus accomplish. If boundary changes were attempted in Lower (and a part of Upper) Silesia they would not basically alter the food supply situation for postwar Germany. Sugar and potatoes would be the foodstuffs primarily involved. Were an area of Silesia now to be returned to Germany it would occur at a time when western Germany has achieved potato self-sufficiency, and under world market conditions that permit Cuban sugar to be laid down at German ports at prices well below German costs of production, even at the official rate of mark-dollar exchange. As a consequence, a new aid and subsidy program would quite probably be required to maintain agricultural production in the restored territory at anything like a desired level.

The fixing of a final eastern German boundary at a Peace Conference has been a repeatedly announced policy of the Western Allies. For many reasons some readjustments in the present boundary would be desirable. There should be no delusions, however, that the German food problem can be solved in that way.

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An Analysis of Commercial Construction[†]

By HENRY B. SCHECHTER*

EXPENDITURES for new, privately-financed commercial construction during the postwar years have averaged a little more than \$1 billion a year, just about equal to the annual average rate for 1924 through 1930. If the current postwar construction pattern were to parallel that which followed World War I and show a marked upswing in activity for the next two or three years, it would imply an annual rate of \$1.5 billion or more of commercial construction by the end of that period. A billion dollars of annual investment was an important element in sustaining the economy at a high level in the late 'twenties, and the prospects for commercial construction investment of about \$1.5 billion per year are important in the calculations for maintaining the economy at its present full-employment level during the next few years. In consideration of this larger question it has been necessary to analyze questions of more particular current interest, such as the present economic position of different types of commercial structures, decentralization of commercial facilities, and the financing of commercial construction.

Commercial construction consists of two major components—"stores, restaurants and garages" and "warehouse, office and loft buildings." Stores include all retail stores or shops used in the sale of goods or services; garages include storage and repair garages and service stations; restaurants include all places where food and drink are sold for consumption on the premises; warehouses

include all commercial warehouses and storage buildings (excluding cold storage, grain elevator and storage silos); office and loft buildings include banks and other financial institutions as well as all types of office buildings and loft buildings, except buildings owned by public utility companies.¹

Stores, Restaurants and Garages

In the three years preceding the second World War and in the four postwar years, stores, restaurants and garages accounted for over 70 percent of total new private commercial construction in each year. It is expected that in the years immediately ahead it will be this component, which may be termed "retail commercial construction," that will continue to be the most important in setting the level of commercial construction.

The construction of a retail establishment for the sale of goods and services is based on the builder's estimate of capitalized return upon the investment. The estimate of return upon the investment is, in turn, based on the volume of business which can be done at the particular location, figuring that the percentage of the business volume which must be allocated for rent will be at least sufficient to cover capital charges and yield the expected return. Many stores are built by investors as rental properties. Essentially, the builder-investor calculates his rental income prospects on an estimate of the potential volume of business. A direct derivation of rental income based

their helpful suggestions. The contents are the personal responsibility of the author.

* Loan Guaranty Service, Veterans Administration.

¹ See *Technical Notes* section for full listing and discussion of buildings included under each classification.

[†] This study was prepared at the Construction Division, U. S. Department of Commerce, under the direction of Samuel J. Dennis who furnished valuable criticism. Thanks are due also to Robinson Newcomb and Sidney Gertler for

on business volume is becoming increasingly common with the use of the percentage lease, calling for stated percentages of annual gross business volume as rent.

The competitive element in retailing

operations makes for the building of new structures, (1) in locations which will be more convenient to the population than older locations, and (2) in locations immediately adjacent to those in which the volume of business is most intense. There-

TABLE I—NEW PRIVATE COMMERCIAL CONSTRUCTION ACTIVITY, IN CURRENT PRICES AND IN 1939 PRICES, 1920-1948¹
(millions of dollars)

YEAR	In Current Prices			In 1939 Prices		
	Total Commercial Construction	Warehouses, Office & Loft Buildings	Stores Restaurants & Garages	Total Commercial Construction	Warehouses, Office & Loft Building	Stores Restaurants & Garages
1920	625	258	367	501	241	260
1921	570	258	312	558	268	290
1922	613	286	327	647	319	328
1923	716	292	424	671	291	380
1924	740	304	436	700	306	394
1925	940	357	583	900	361	539
1926	1107	393	714	1039	379	660
1927	1145	409	736	1085	405	680
1928	1121	451	670	1068	449	619
1929	1097	581	516	1041	564	477
1930	856	559	297	856	548	298
1931	437	259	178	482	281	201
1932	216	110	106	274	137	137
1933	127	41	86	167	52	115
1934	169	62	107	204	71	133
1935	206	70	136	250	82	168
1936	283	104	179	332	121	211
1937	378	128	250	386	133	253
1938	279	89	190	282	90	192
1939	287	76	211	287	76	211
1940	342	85	257	337	85	252
1941	400	114	286	372	108	264
1942	150	57	93	125	48	77
1943	32	13	19	26	11	15
1944	55	16	39	43	13	30
1945	199	52	147	151	42	107
1946	1110	309	801	709	204	504
1947	835	216	619	405	120	286
1948	1224	323	901	535	165	370

¹ Excludes warehouses, office and loft buildings and stores, restaurants and garages built for ownership by privately-owned public utilities. For 1920-32 includes publicly-owned commercial building, believed negligible in amount.

Source: Department of Commerce.

fore, the supply of stores, restaurants and garages towards which the economy tends to adjust is dependent upon (1) the adequacy (by accepted standards) of shopping and service facilities for all residential areas, an extensive concept entailing the provision of minimum shopping facilities for new residential neighborhoods; and (2) the volume of consumer expenditures, an intensive concept, encompassing the erection of new facilities or the expansion and improvement of present facilities by existing or new firms in attempts to garner more business in periods of new high levels of consumer expenditures.

The rate of construction of new retail commercial structures in response to these intensive and extensive influences is affected by technological innovations in retailing operations, such as self-service markets, automatic vending machines, and frozen food packaging. The data are not available with which to make a direct quantitative measurement of the influence of technological innovations. However, in the projection of the year-to-year relationships which have been developed between retail commercial construction and related factors the influence of the technological innovations upon space requirements has been accounted for implicitly by using the annual volumes of actual construction as one of the variables. Furthermore, since the year-to-year changes in retailing methods are not radical and do not encompass a major portion of retail establishments in any given year, it seems unlikely that technological innovations would significantly alter the established relationships for at least a few years.

There is another offshoot of the competitive element which may affect the volume of retail commercial construction in a given year and that is the expansion of chain stores or the entry of

other newcomers into commercially saturated neighborhoods to take business away from established firms. This may result in the abandonment of some of the older stores. However, the resulting empty structures may serve as necessary replacements or expansions for other types of retail outlets in such neighborhoods and thus offset some potential new construction. For instance, a moderate-sized grocery store might have been vacated due to the advent of a chain store food supermarket in a particular neighborhood. The vacated store might serve as an improved place of business for a florist who had been in a structure which has outlived its useful life. Since it is believed that the net effect of this type of development is negligible in its effects on the annual volume of new commercial construction and that a reasonable explanation has been found, based on the two factors previously enumerated, the influence of this facet of retail competition upon construction has been completely discounted in this analysis.

There is also a certain amount of replacement and improvement of existing retail structures which is partly due to obsolescence and partly to competition. In many cases, improvements (by competitors A and B) may make obsolete the unimproved structure of a competitor (C). As indicated below, there seems to be a minimum volume of replacement and major alteration work in retail commercial construction, and fluctuations above this minimum would appear to be largely a function of the volume of consumer expenditures.

The extension of shopping facilities in areas where new residences are being built and new neighborhoods developing is an obvious method of obtaining retail business which has been practiced in recent decades. It is known that there is an interaction between residential

growth of an area and commercial growth of an area.² There are periods of residential construction and commercial construction which succeed each other repeatedly and at times overlap. Although studies of individual areas cannot yield any conclusive evidence as to cause and effect, it is possible to arrive at an acceptance or rejection of alternative patterns of development from an analysis of the national aggregate data on the number of new dwelling units started annually and the annual physical

volume of retail commercial construction. The latter variable is represented by expressing the annual current dollar volume of construction in 1939 prices.

Several correlations have been made between the number of housing units started and the physical volume of retail commercial construction, postulating different relationships. The results are summarized in Table II. It is evident that, in the aggregate, residential construction does not follow the development of commercial facilities. The supposition that annual volume of residential and retail commercial construction vary simultaneously was not too well supported by a correlation coefficient, $r = +.74$, for the period 1920-1948. In contrast, the relationship between the number of dwelling units started in a given year and the volume of retail commercial construction in the following year yielded a coefficient, $r = +.87$. The annual volumes of retail commercial construction in the latter correlation are no doubt due in part to residential starts in the same year as that of the commercial construction, as well as to starts in the previous years. The cumulative effect of housing starts over a period of several years upon the current annual volume of retail commercial construction is probably much greater with retail commercial construction in the second year following housing starts. The latter timing relationship yielded the highest coefficient ($r = +.93$) but several more recent observation points were farther from the line of average relationship than was the case with a one year lag. Con-

TABLE II—CORRELATION COEFFICIENTS BETWEEN NUMBER OF HOUSING UNITS STARTED AND RETAIL COMMERCIAL CONSTRUCTION ACTIVITY IN 1939 PRICES

Relationship	Correlation Coefficient for period 1920-1941	Correlation Coefficient for period 1920-1948 (averaging Retail Commercial Construction for 1942-46 and the Housing Starts for Corresponding Years as One Year)
Volume of Retail Commercial Construction in Current Year (e.g. 1921) and Number of New Dwelling Units started in following year (e.g. 1922) . . .	+ .328	+ .272
Number of Dwelling Units Started in Current Year (e.g. 1921) and Volume of Retail Commercial Construction in Current Year (e.g. 1921).	+ .792	+ .737
Number of Dwelling Units Started in Current Year (e.g. 1921) and Volume of Retail Commercial Construction in Following Year (e.g. 1922)	+ .904	+ .866
Number of Dwelling Units Started in Current Year (e.g. 1921) and Volume of Retail Commercial Construction in Second Year thereafter (e.g. 1923)	+ .961	+ .933
Number of Dwelling Units Started in Current Year (e.g. 1921) and Volume of Retail Commercial Construction in Third Year thereafter (e.g. 1924)	+ .730	+ .670

² For fuller exposition on this association in various forms, see Richard U. Ratcliff, "Some Principles of Site Selection in Outlying Retail Subcenters," *National Marketing Review*, Fall 1935, p. 106, and "The Problem of Retail Site Selection, Michigan Business Studies, Vol. IX, No. 1, University of Michigan, 1939. Also Malcolm J. Proudfoot, "City Retail Structure," *Economic Geography*, October 1937, and Richard P. Doherty, "The Movement and Concentration of Retail Trade in Metropolitan Areas," *The Journal of Marketing*, April 1941.

sidering all factors, it is believed that for the purposes of arriving at a method of estimating the future trend of construction in which this relationship is one of the economic data considered, the one-year lag is best. A fifth correlation, using a three-year lag between housing starts and retail commercial construction produced a lower correlation. The construction volume data used are on the basis of work put in place rather than work started.³ The results which were obtained certainly lend support to the hypothesis that, in the aggregate, the construction of retail commercial facilities lags behind the construction of residences; the same probably holds true generally in individual areas.

The correlation analyses were for annual data covering the years 1920-1948. The results presented above were derived from computations in which the averages for the years 1941-1945 and 1942-1946 were treated as one year to avoid distortions caused by wartime restrictions upon construction. About the same results were obtained when the same analyses were carried through for the shorter period 1920-1941 without the inclusion of data for the war period.

Retail Commercial Construction and Related Factors

The points of relationship between the volume of retail commercial construction and the number of housing starts form a pattern which can be explained in terms of the intensive and extensive factors affecting retail commercial construction. Since the statistical records available permit analysis of less than two complete cycles, it is not yet possible to explain the historical pattern of behavior with

complete assurance, or to draw positive inferences about the nature of the relationships. Furthermore, the relationship between new dwelling units and commercial construction can be interpreted only in the light of other pertinent economic influences considered in this analysis. With these qualifications, however, the tentative conclusions that suggest themselves form a working hypothesis that should prove useful to further study of the problem. In terms of the long-term average relationship there is relatively more retail commercial construction in Year II than housing construction in Year I of the first, second, and perhaps third or fourth overlapping bienniums of a residential building upswing, such as those ending in 1921, 1922, 1923 and 1924, but with each successive period this relative advantage of retail commercial construction declines and, in the remaining periods, up to about the peak of the housing construction cycle, the situation is reversed and there is relatively more housing construction in Year I than retail commercial construction in Year II of each successive overlapping biennium (Fig. I).⁴ This would be a logical consequence of the development of neighborhoods. After the initial residential construction in an area has been completed, the shopping facilities follow and the shopping needs of additional residents in the area can be met in large degree by the newly built retail establishments. For example, the first 500 dwelling units started in the first year may be followed by six primary retail stores, such as grocer, baker, barber, dry cleaner, shoe repair and pharmacy. However, 650 units started in the third year may bring only two secondary-

³ The housing starts series used was for permanent dwelling units only. Temporary dwelling units, built almost exclusively during the five prewar and war years which have been averaged and treated as one year in the correlations, were not counted. It is doubtful whether temporary dwellings would result in private commercial construction to

⁴ The sequence of this relationship is not independent of various other economic factors which are reflected largely in the physical volume of consumer purchases.

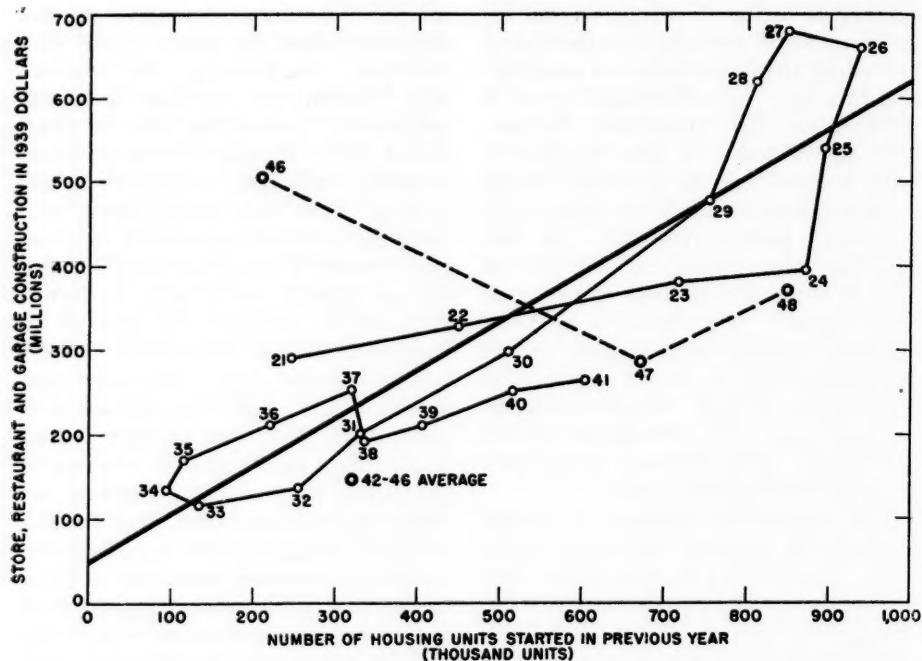


FIGURE I—RELATIONSHIP OF NEW PERMANENT NONFARM DWELLING UNITS STARTED IN PREVIOUS YEAR AND VOLUME OF STORES, RESTAURANTS AND GARAGES CONSTRUCTED IN CURRENT YEARS, AS MEASURED IN 1939 PRICES.

The regression line in this figure is based on the equation $Y = 49 + .5274X$, where Y represents the volume of store, restaurant and garage construction in the current year, measured in thousands of 1939 dollars, and X represents the number of new dwelling units started in the previous year.

The pattern formed about the regression line by the points of relationship can be explained in terms of the cyclical behavior of new housing construction and of consumer expenditures. As housing construction increases from year to year in the first few years of a building cycle, the actual points of relationship form a continuous straight line, graphically, which crosses the line of regression at a positive but decreasing slope (e.g., 1921-24 and 1934-41). The points of relationship for the terminal years of the early periods (e.g., 1921 and 1935, and 1924 and 1941) are at the greatest distance (i.e., above and below, respectively) from the regression line. In terms of the long-term average relationship with housing construction, this represents relatively more retail commercial construction in the early years of a residential construction cyclical upswing and relatively less about the time the peak of the residential cycle has been reached.

As housing begins to decline but consumer expenditures in stores, restaurants and garages continue to increase under the propulsion of the momentum from the boom in housing and other capital investment, the points of relationship between retail commercial construction and housing are found significantly above the line of regression, making for relatively more retail construction than housing in terms of the long-term average (e.g., 1926-29). With the collapse of the general business boom and the consequent sharp decline in consumer expenditures, the annual volume of retail commercial construction also declines sharply to depression levels (e.g., 1929-33), completing the cyclical pattern of the retail commercial-construction, new-housing relationship.

purpose stores, such as housewares and clothing, in their wake. As a result there is a dilution of the commercial construction component of annual total construction volume in a residential neighborhood as the residential building cycle progresses toward its peak.

As the building cycle progresses, the intensity of consumer expenditures per dwelling unit keeps increasing due to growth of families and income. By the time the residential construction cycle reaches its peak there is a realization of the opportunity for profitable duplication of facilities in newer neighborhoods and expansion and rebuilding in older neighborhoods. As housing begins to decline, but consumer expenditures in stores, restaurants and garages continue to increase, the annual volume of new retail commercial construction rises relative to housing construction. The relatively high levels of retail types of construction in years such as 1926 through 1929 can be explained by the new heights of retail consumer purchases, measured in constant prices, which were reached in each of the successive years.⁵ Since the volume of new store, restaurant and garage construction per new dwelling unit was greater than average for a number of successive years, it probably was supported at such heights by a need for increased capacity to handle higher volumes of consumer purchases.

Some judgment can be formed as to the degree to which the growth in consumer expenditures in an area is likely to take the form of intensified expenditure in existing shopping areas, and to what

extent it may result in a more rapid extension of retail commercial facilities, by analyzing the current trend toward centralization or decentralization of population. A given increase in population can be housed through an increase in density of occupied land areas, or through an extension of housing facilities to unoccupied areas. Increased density lends itself to increased buyer density per commercial structure which allows for a delay in the duplication of some shopping facilities, whereas an extension of housing facilities is apt to be followed shortly by a full "first layer" of necessary shopping facilities.⁶

During the 1920's there was a great increase in the population of central cities and a correspondingly heavy intensification of purchasing power. As the population density per square mile was increased greatly, the dilution of retail commercial construction as a percentage of the total retail commercial and residential construction continued from year to year from 1921 to 1924. By 1925 the opportunities for duplication of facilities in existing shopping areas had cumulated and construction was spurred on by a profitable outlook due not only to the increased buyer density, but also due to the increased land values and capitalization of the existing central urban commercial structures whose rental values and charges had gone up. The new structures, therefore, could also hope to realize a high rental income. There was a spurt of retail commercial construction which kept that activity high relative to the amount of residential con-

⁵ An annual series of consumer expenditures in stores, restaurants and garages was compiled for 1929 through 1948, using detailed data on consumer expenditures, published by the Department of Commerce, National Income Division, for 1929-1948. Included in the estimated consumer expenditures in stores, restaurants, and garages were consumer expenditures for all durable consumers goods, for all non-durable consumer goods minus imputed items and for selected services which are rendered in stores. The series of all consumer expenditures in stores, restaurants and

garages was extended backward to 1921 by linking this series in 1929 to an index of the old (unrevised) Commerce Dept. series of total consumer expenditures. See *Technical Notes* for fuller explanation.

⁶ Ignoring the factor of extension of housing facilities and approaching the problem of retail commercial construction through a direct relationship between the annual volume of such construction and the estimated annual net increase in the number of families fails to show any significant relationship.

struction from 1925 through 1929. After that, the sharp decrease in consumer expenditures served to bring retail commercial construction down to minimum levels where it remained throughout the depression. There were signs of a commercial construction revival in 1936 and 1937 in response to an increasing volume of new housing and to new highs in the physical volume of consumer purchases. However, the drop in consumer expenditures in 1938 set back this revival and a few years later the wartime restrictions on construction cut retail commercial construction back almost to zero.

During the years following the last years of the house building decline (i.e., 1932, 1933 and 1934) the construction of stores, restaurants and garages hovered about the \$100 million level. This would appear to be the approximate minimum for relocation, replacement and new ventures which is associated with the low

volume of consumer expenditures and accompanying poor business outlook which prevailed in those years. The three years 1932-34 which marked the lowest house building activity during the 1920-48 period, were also the only three years in which more than half of new non-farm dwelling units started annually were in rural non-farm areas. The comparatively widespread physical dispersion of the new non-farm housing started in those years was probably a factor in producing a relatively greater amount of retail commercial construction in 1934 and 1935 than new housing started in 1933 and 1934, respectively.

From the relationship between aggregate housing starts and aggregate retail commercial construction, it can be concluded that a change in the amount of total consumer expenditures in stores, restaurants and garages which is a concomitant of population growth and ac-

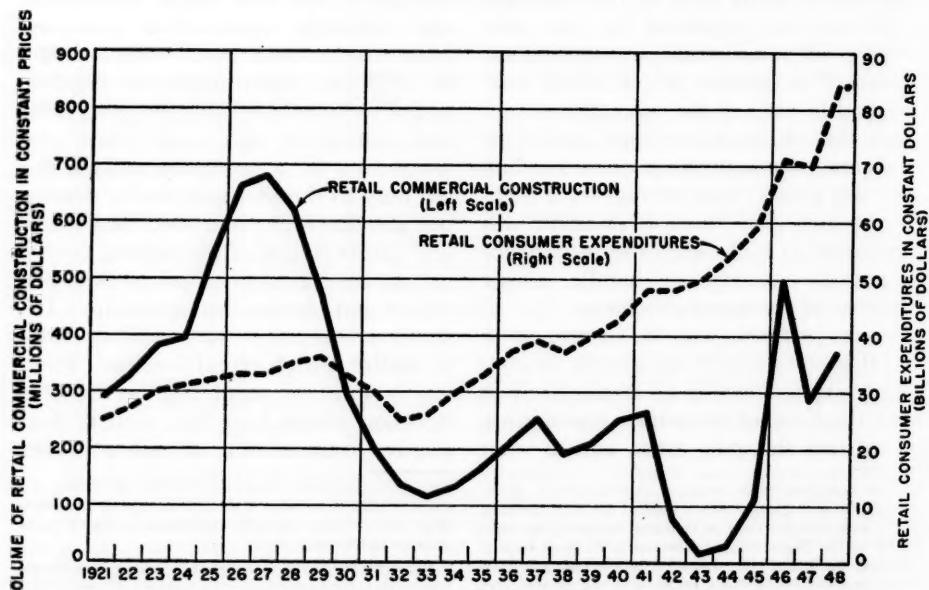


FIGURE II—RETAIL COMMERCIAL CONSTRUCTION AND RETAIL CONSUMER EXPENDITURES: ANNUAL VOLUMES IN CONSTANT PRICES 1921-1948. * PRELIMINARY ESTIMATE.

companying expansion over wide geographic areas, results in retail commercial construction within the short time

period of about a year.⁷ On the other
⁷This implies a net growth of population and extensive housing construction. The natural growth of the population (Footnote 7 continues on page 124)

TABLE III—NUMBER OF NEW PERMANENT NON-FARM DWELLING UNITS STARTED; NEW PRIVATE CONSTRUCTION OF STORES, RESTAURANTS, AND GARAGES IN 1939 PRICES; AND CONSUMER EXPENDITURES IN RETAIL COMMERCIAL STRUCTURES IN 1935-39 AVERAGE PRICES; 1920-1948.

YEAR	Number of Dwelling Units Started (thousands of units) ¹	Private New Construction of Stores, Restaurants, and Garages in 1939 prices (Millions of dollars) ²	Estimated Consumer Expenditures in Retail Commercial Structures in 1935-39 average prices (Millions of dollars) ³
1920.....	247	.....	.....
1921.....	449	290	24,833
1922.....	716	328	27,273
1923.....	871	380	29,773
1924.....	893	394	31,301
1925.....	937	539	31,567
1926.....	849	660	32,935
1927.....	810	680	33,430
1928.....	753	619	35,263
1929.....	509	477	36,308
1930.....	330	298	32,509
1931.....	254	201	29,892
1932.....	134	137	25,343
1933.....	93	115	25,957
1934.....	126	133	30,317
1935.....	221	168	32,947
1936.....	319	211	37,226
1937.....	336	253	38,818
1938.....	406	192	37,393
1939.....	515	211	40,150
1940.....	603	252	43,207
1941.....	706	264	48,486
1942.....	356	77	47,617
1943.....	191	15	49,828
1944.....	142	30	53,537
1945.....	209	107	59,083
1946.....	671	504	70,620
1947.....	849	286	70,317
1948.....	.....	370	.....
1941-45 Average	321	.....	.....
1942-46 Average	.....	146	.....

¹ Excludes temporary re-use dwellings.

² Source: Department of Commerce.

³ Source: Department of Commerce, 1929-1948; data unadjusted for price changes published in Table 30 of National Income Supplement to Survey of Current Business; 1944-47: *Survey of Current Business*, July 1948; 1921-28, data from preliminary, unpublished series of Department of Commerce Tabulation on Disposition of National Income (printed February 5, 1946) linked to data for later years on basis of 1929=100 and extended back to form a continuous series. This series deflated by Bureau of Labor Statistics Consumers Price Index to derive expenditures for all years in constant (1935-39 average) prices.

hand, changes in aggregate consumer expenditures in stores, restaurants, and garages which result from increased density of population per dwelling unit and increased per capita expenditures do not lead to an extension of facilities within as short a period.

Financing

The great growth of funds in the hands of insurance companies has intensified their needs for investment outlets, and insurance and real estate agencies in many localities have been appointed as loan correspondents for the larger insurance firms. Contacts between local fields of investment and one of the chief long-term credit sources are thus maintained, and sound commercial developments today have access to insurance company financial backing. In addition to the insurance companies who will probably furnish a great deal of financing for the larger, new type of retail commercial structures, the commercial banks in metropolitan centers still furnish a good deal of mortgage capital for large stores and for developments of so-called "taxpayers" in established neighborhoods. The large reserve and the liquidity of the city banks which have characterized the postwar period indicates that these banks, too, will be able to supply funds for the construction of new retail ventures, or for the enlargement and modernization of older stores.

Finally, there is a new channel for the

financing of stores which is probably better developed today than ever before. The chain store and department store corporations today are larger, financially sounder and more numerous than in the past, and—when market conditions are favorable—they can readily float securities as well as utilize their accumulated surplus funds in order to finance the construction of new stores if they wish to expand. Considering all the well supplied sources which exist today, there should be no financing obstacle to meeting the needs of retail commercial construction during the next few years.

Current Position of Retail Commercial Construction

In analyzing retail commercial construction volume since the war, the effects of wartime and postwar construction restrictions have to be considered. During the war years there were restrictions on both residential and commercial construction, but the effects on the latter type were much more severe. With each succeeding year after 1941 there was a significant rise in the level of consumer expenditures. These war conditions built up a great backlog of demand for commercial construction on which starts were made in very heavy volume in late 1945 and early 1946. Therefore, the immediately preceding year of residential construction was not the important factor in the attainment of a volume of construction of stores, restaurants and garages in 1946 equal to about \$500 million, measured in 1939 construction prices; more important were the influences of wartime restrictions and greatly increased consumer expenditures.

Restrictions on commercial construction were reinstated on March 26, 1946. However, there had been so much advance publicity given to the issuance of restrictions upon non-housing con-

(Footnote 7 continued from page 123)

tion and living space expansion usually occurs during periods of stable or increasing individual and aggregate income, so that the new individuals are provided for, while the consumption standards of the old members of the population are maintained, resulting in a net increase in aggregate consumption expenditures. At the same time the extension of housing and shopping facilities generates increased investment and income resulting in further increments to existing purchasing power. In distinction to a net growth in population, a shift in population makes for relocation construction which may not be great in total volume, although this volume may fluctuate as much as 50 to 100 percent between two years. A shift in population does not directly lead to a net increase in retail consumer expenditures.

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struction that enough starts were made on retail commercial structures before the deadline to insure a record dollar volume (though not a record physical volume) of construction of stores, restaurants and garages in 1946. The effect of the restrictions on work put in place was felt more in 1947 than in 1946 as the restrictions were in force during the latter part of 1946 and during the 1946 spring season of construction starts. As a result, the 1947 physical volume of construction of stores, restaurants and garages was lower than 1946 by about 40 percent, in spite of a great rise in the number of housing units started in 1946 over the number started in 1945. New construction activity in stores, restaurants and garages in 1948 amounted to \$904 million, an increase of 46 percent over 1947 in dollar volume. The equivalent in 1939 prices would be about \$372 million, an increase of only 30 percent over the comparable figure for 1947.

Preliminary data for 1949 indicate a drop of about 22 percent from 1948 in retail commercial construction, dollar-wise and on a physical volume basis. This decline which is analogous to the 1937-38 movement is attributable to the general business recession and drop in personal consumption expenditures during the first half of 1949. The declining prices of consumer commodities made prospective retailers hesitant about entering business, since an immediate inventory loss would be in the offing. In addition, the reversal of the postwar trend of rising expenditures probably caused some plans for expansion of existing firms to be held up. Given a continuation of the improved general and retail business situation prevalent during the latter part of 1949, however, and in

view of the relatively extensive land development for one million new dwelling units started in 1949, the annual volume of retail commercial construction should again be on the rise in 1950.

Warehouse, Office and Loft Buildings

There has been a secular decline in relative importance of warehouse, office and loft buildings in the total of commercial construction. In part, this is due to the practical disappearance of loft buildings in new construction. Warehouse and office buildings constitute almost 100 percent of the warehouse, office and loft building construction in current years. Warehouses and office buildings both provide space used for rendering services to business through the storage of goods, and through the conduct of legal, accounting, banking and other business services. Therefore, the demands for both types of space can be expected to fluctuate together in response to general business activity. This expectation is well supported by the general parallelism of demand for the available space of each type as suggested by the year-to-year movement of vacancy ratios from 1929 through 1948, a period for which vacancy data for both types of buildings are available.⁸ Since current construction costs for new warehouse or office space can be taken as being generally similar, the basic factors affecting the demand and supply (of new warehouse and office buildings) can be treated in terms of parallel and similar behavior; and the behavior of the total of warehouse and office building construction can be analyzed on the basis of factors influencing office building construction.

Contract awards for office building construction were more than three times

⁸ Data for warehouse vacancy are also available for 1928, but for the latter half of the year only, and seasonal factors make them incomparable with mid-year data on warehouse vacancy used for other years. Vacancy ratios for

warehouse buildings are based on the total number of square feet of occupiable space intended for public warehousing of general merchandise, excluding office space and space leased for long terms.

as great as contract awards for warehouse construction in 1938 and in each year thereafter in the 37 eastern states covered by F. W. Dodge Corporation construction contract statistics. For historical and institutional reasons mentioned later in this paper, it is believed that warehouse construction will continue to be a minor part of the total of new warehouse and office building construction; and, in view of the like supply and demand factors in operation, the movement of annual warehouse construction volume will not loom large in the movement of the total of new warehouse and office building construction. Therefore, for purposes of simplification, the analysis will be carried forward largely in terms of office building construction.

Factors Affecting Office Building Construction

The decision to build an office building involves calculations as to anticipated total income and total costs. The total income is dependent on the rental rate per square foot of space and the vacancy rate. The vacancy rate is significant not only as a factor to be used in deriving total current income, but even more important as an indication of how tight the market is, or how certain a building owner can feel of renting his building quickly and of securing near the top prevailing rent, defined as the highest

rent currently being received for comparable space facilities. If the vacancy ratio is low and particularly if it is also declining, there is a good likelihood of obtaining the highest rent. If the vacancy ratio is high or rising, there is little likelihood that the highest rent can be obtained. (The highest rent will usually be far above the average rent due to lags in raising rents caused by long leases when vacancy is decreasing, and in lowering rents of tenants in continuous occupancy when vacancy is increasing.) Thus, the vacancy rate suggests the prospects for rent raises or reductions, indicates the security of the prevailing top rent level, and serves as a factor in the determination of current income or the prediction of future income.

The prospective builder does not have to figure his competition in terms of the average rental but in terms of the highest rental. It is the marginal seller of building space against whom the new building operator will compete and the latter can estimate his income on the basis of a rent level equal to about the highest prevailing rental for comparable space facilities. Under favorable conditions the new building owner can achieve the highest rent more quickly than old building owners since he is not bound by previously existing leases.

Total costs, consisting of variable costs and fixed costs, are set against total income in calculating anticipated net income. Since the variable costs, such as heating, lighting, cleaning and decorating will, with slight exceptions, move up or down in similar fashion for all building operators, the variable costs will not determine the year in which construction is undertaken. The fixed charges, however, will vary greatly depending on the particular year in which a building has been constructed. The interest rate and the tax rate are institutional and change

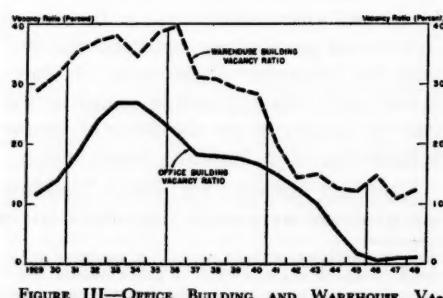


FIGURE III—OFFICE BUILDING AND WAREHOUSE VACANCY, 1929-1948.

slowly, but the construction costs which form the major part of the base of finance and tax charges and, more important, determine the future amortization and depreciation charges, may vary greatly from one year to another. Depreciation charges may or may not affect the rental rate decisions of operators of existing buildings but they do enter into the calculated income expectations of prospective investors in new buildings. Thus, it is construction cost, the determinant of future amortization and depreciation charges and of other fixed charges, which may act as a deterrent or stimulant to construction in a given year, just as the vacancy ratio which leads to judgments as to anticipated income may act as an income factor deterrent or stimulant to construction in a given year.

Of great importance in overcoming the inertia of office building activity which may exist in the first few years of an era which appears propitious for construction is the availability of funds. Although the vacancy and cost figures may indicate great potential profit in the current erection of an office building, a flow of funds is necessary to finance the structure for an extended term. Given a certain vacancy-and-cost relationship, the degree of liquidity preference for money which prevails at the time and the effectiveness of existing credit channels play a large part in facilitating or restricting a considerable volume of office building construction.

Judging by past experience for which data are available, during periods encompassing several years of fairly stable construction costs, a low (but not rapidly rising) vacancy ratio of 10-15 percent or less will apparently allow the top rental levels to rise as lease expirations and re-

newals take place.⁹ After a few years of upward rental adjustment against a perspective of construction cost stability, the outlook for new office building prospects is comparatively favorable as confident high-yield anticipation will have been built up. Confidence in the likelihood of obtaining rentals equal to or above the former "highest rental" is built up as top rents rise and the previous highest rent rates become more prevalent, with the result that increases appear in the average rent rate or average rental income per square foot of occupied space. A comparison of the changes in vacancy rates, which provide the impetus for rent rate changes and changes in average rental income per square foot of occupied space, indicates that it may take from two to five years before the trend of average rental rate changes direction and moves inversely to the vacancy ratio. This suggests that it may take a few years of low vacancy to build up any degree of confidence in a new top prevailing rent. Sharply rising construction costs would probably preclude a great increase in construction even though a vacancy ratio conducive to the erection of new buildings does exist. When there is a period encompassing several years of a high (or low, but rapidly rising) vacancy ratio, new office building construction probably will not be encouraged even if construction costs

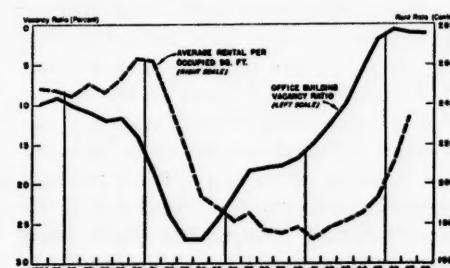


FIGURE IV—OFFICE BUILDING VACANCY AND RENTAL INCOME PER SQUARE FOOT OF OCCUPIED SPACE.

⁹ During the 1924-29 period, the prevalence of a vacancy ratio ranging between 9 and 12 percent was conducive to a rising rental income per occupied square foot of office space and to an increasing volume of new construction.

are falling relatively fast since it would be impossible to establish a feeling of security for the high rate of return which might result from current factors of cost and income.

Considerations which affect office buildings erected by individual firms primarily for their own occupancy are somewhat different. The building dimensions can be so planned by the owner-occupant that there is a good assurance of practically no vacancy in the foreseeable future. In such instances a high current level of construction costs is not apt to be a deterrent to construction. The pressure for additional space may affect an individual firm in several ways which would make it profitable to build during a period of high construction costs. There may be a certain amount of inefficiency in operations due to a scattering of the office force in different buildings, and the efficiency resulting from centralization of offices may more than compensate for the increase in imputed rent. The investment of funds in an owner-occupied building may also allow for the employment of funds which otherwise are idle. This is particularly true in the case of large insurance companies which have been experiencing a long-term secular growth and can make a comparatively favorable investment of funds in their own office buildings. It is also quite possible that the realty costs are but a small factor in the total business operations of a firm large enough to occupy its own office building, and the cost of the structure as a factor in the cost of a product or service sold is not very important. Therefore, in times of very low vacancy ratios and general business expansion, a substantial proportion of the office building construction which takes place during the first few years of a rise in the volume of office building may be in the form of owner-occupied buildings.

With an office vacancy ratio which had reached a low of about 10 percent in 1924, declined to about 9 percent in 1925, and rose by but one percent in each of the three subsequent years (indicating the possibilities of rising rent levels during a period of fairly stable construction costs), the annual volume of construction of warehouse, office and loft buildings began to increase after 1924. The continued "normal" and comparatively stable range of the vacancy rate made increases in rents possible while the costs for a new building remained almost at a standstill. Under the circumstances the inducement for construction grew stronger with each year from 1924 to 1929. Only the financing lubricant was needed to accelerate the rate of construction. To answer this need, the real estate bond house and the single-property real estate bond became popular institutions of the 1920 decade. The single-property real estate bond or mortgage participation certificate is usually the obligation of a corporation formed to own, operate and frequently to construct the building which serves as security for the loan. These debentures are issued to individual buyers through real estate and other securities houses. The estimated annual volume of issue of such bonds had grown from about \$50 million in 1921 to about \$1,000 million in 1927 for all types of urban first mortgage real estate securities. About 27 percent of the issues for the first 11 months of 1927 were accounted for by office buildings.¹⁰

The profits to be made from the promotion and financing of new buildings, the ease of gathering capital through mortgage security issues to the public, and the favorable vacancy and construction cost factors combined to stimulate greater volumes of office building con-

¹⁰ Estimated by W. C. Clarke of S. W. Straus & Company, published in *The Internal Debts of the United States*, edited by Evans Clark, Twentieth Century Fund, 1933, p. 74, 76.

struction in each successive year after 1924, with a peak being reached in 1929, and a 1930 volume which was only slightly lower. Although the vacancy ratio did rise from 9 percent in 1925 to 12 percent in 1928 and 1929, it did not alter the composite of economic influences making for office building construction sufficiently to deter the start of such mammoth structures as the Bank of Manhattan Building (over 60 stories) and the Empire State Building (over 100 stories) in 1929. Office building construction costs did not rise more than 4 percent above their 1924 level in any of the following ten years. Lack of greater increases in vacancy and a continued high level of general business activity maintained a favorable outlook for new office ventures.

Although the vacancy ratio rose quickly to 14 percent in 1930 and 18 percent in 1931, the carryover of construction work on uncompleted large

buildings insured a volume of activity in 1930 almost equal to that of the peak year of 1929. Thereafter, as much of the new building space remained vacant and occupancy in old buildings declined, the vacancy ratio increased. With the ensuing decline in activity, construction costs fell in each of the three succeeding years and remained below the 1930 level until the United States entry into World War II, but the vacancy ratio of between 15 and 27 percent which prevailed was a sufficient deterrent to a substantial volume of construction in any year.

Warehouse Buildings

Although the economic factors affecting warehouse construction are practically identical with those affecting office building construction, a historical perspective of operations in warehousing over the last three decades may help in understanding the current situation. Data available for a small number of

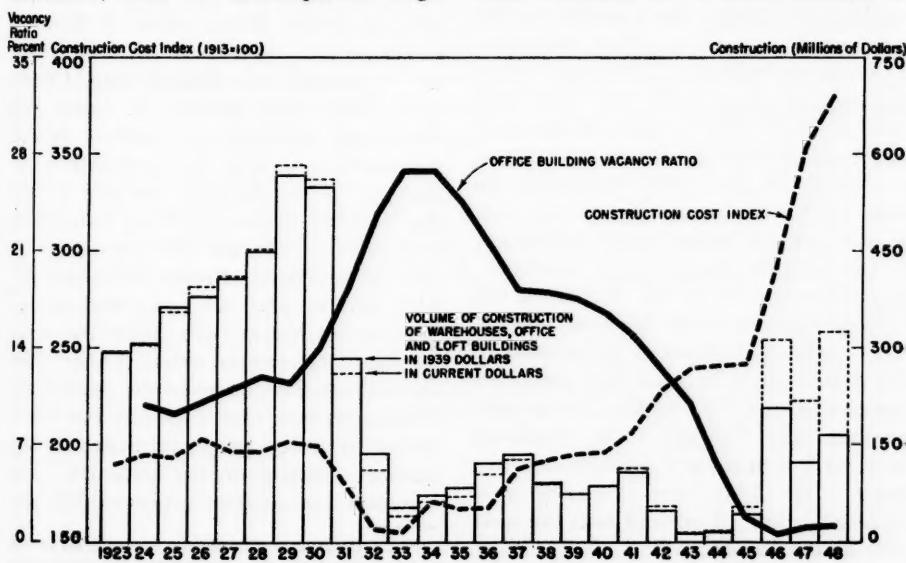


FIGURE V—NEW PRIVATE CONSTRUCTION OF WAREHOUSES, OFFICE AND LOFT BUILDINGS, IN CURRENT PRICES AND IN 1939 PRICES; OFFICE BUILDING VACANCY; AND INDEX OF COMMERCIAL BUILDING CONSTRUCTION COSTS, 1923-1948.

firms in different parts of the country (ranging from 22 in a year to 37 in a year and operating an aggregate area ranging from 11 million to 15 million square feet, respectively) indicate that net operating revenue per square foot rose slowly each year—or a total of 12 percent—from 1922 to 1927 in the public general merchandise warehousing industry.¹¹ However, due to the comparatively heavy fixed cost nature of the industry arising from the prominence of building investment depreciation and interest as expense items, the weighted average profit per square foot rose by 40 percent over the period covered for the small sample of operating firms for which data are available.¹²

These data indicate that warehousing rates generally were at a profitable level, particularly from 1924 to 1927. At the same time the stable construction costs and ready flow of investment funds which characterized the period were available to invite the construction of warehouses as well as office buildings. Probably the volume of warehouse building which took place between 1924 and 1928 was sufficient to create an excess of warehousing capacity for the country as a whole. In July 1928, following the late 1927 business recession, vacancy was over 33 percent, according to the findings of the first in the series of warehouse occupancy surveys of the Bureau of the Census. In the peak business year of 1929 vacancy declined to 29 percent of net usable space in June, but remained between 30 and 40 percent in each subsequent year through 1938, declining by 1 percent in each of the following two years. In 1941 the vacancy rate dropped below 20 percent and the next year below 15 percent.¹³

¹¹ C. B. Carruth, "These New Terminal Projects," American Warehousemen's Assn., 22 W. Adams St., Chicago, Ill., 1929, Chart II, p. 15.

¹² *Ibid.*

Influence of Urban Concentration

An historical factor which helped make for a great amount of office building construction in the 1920's was the rapid growth of the central portions of metropolitan areas in that decade. The comparatively large proportion of the rapid metropolitan district population increase which took place in the central cities and urban satellite areas created a great demand for office space within the central areas of cities in order to meet the needs of the more densely settled population. In the 1930 decade there was, comparatively speaking, much less of an increase in population in the central and urban satellite cities. The midtown areas of the largest cities actually suffered losses. In New York City the population living within a radius of two miles of the center of the city decreased by 10.7 percent during the 1930 decade; in Chicago, the decade decrease of population within an equal radius was 19.9 percent and for the population living within a distance of two to four miles there was a decrease of 9.9 percent. In Philadelphia, Cleveland, Cincinnati, Boston, St. Louis and Pittsburgh metropolitan districts similar decreases in central city population occurred.¹⁴ Over the same ten-year period the number of people living more than two miles away from the city center of the metropolitan district increased by 21.1 percent in New York, and by 4.7 percent in Chicago with similar increases in other large eastern cities. Other cities showed small increases in the population residing in the center of the city but much larger increases, percentagewise, in the number residing on the outskirts. For instance, Los Angeles between 1930 and

¹³ U. S. Department of Commerce, Bureau of the Census, monthly releases on occupied space in public merchandise warehouses, based on surveys.

¹⁴ U. S. Department of Commerce, Bureau of the Census, *The Growth of Metropolitan Districts in the United States 1900-1940*, 1947, Table V, page 9.

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1940 experienced 3.9 and 7.4 percent increases in the number living within one mile and at a distance of 1-2 miles, respectively, of the center of the city. However, the increase in the number of people living at distances of 10-12 and over 12 miles away from the center was 109.8

percent and 52.6 percent, respectively.¹⁵

The trend toward greater rural and suburban area settlement in the metropolitan districts has continued in the present decade, judging from the distribution of new nonfarm housing units

¹⁵ *Ibid.*

TABLE IV—VACANCY RATIOS IN OFFICE BUILDINGS AND WAREHOUSES, INDEX OF COMMERCIAL BUILDING CONSTRUCTION COSTS AND PRIVATE WAREHOUSES, OFFICE AND LOFT BUILDING CONSTRUCTION IN 1939 PRICES, 1923-1948

YEAR	Office Building Vacancy (Percent of total space vacant) ¹	Warehouse Vacancy (percent of total space vacant) ²	Index of Commercial Building Construction Costs ³ (1913 = 100)	Warehouse, Office and Loft Building Construction Activity in 1939 prices ⁴ (Millions of dollars)
1923.....	.....	.....	190	291
1924.....	9.9	.....	194	306
1925.....	9.2	.....	193	361
1926.....	10.1	.....	202	379
1927.....	10.9	.....	197	405
1928.....	11.9	33.6	196	449
1929.....	11.6	29.0	201	564
1930.....	13.9	31.6	199	548
1931.....	18.3	35.4	180	281
1932.....	23.8	37.2	157	137
1933.....	26.9	38.1	155	52
1934.....	26.9	34.6	171	71
1935.....	24.5	38.6	167	82
1936.....	21.4	39.6	168	121
1937.....	18.2	31.1	187	133
1938.....	18.0	30.7	192	90
1939.....	17.7	29.2	195	76
1940.....	16.7	28.3	196	85
1941.....	14.9	19.8	206	108
1942.....	12.5	14.4	229	48
1943.....	10.0	15.0	238	11
1944.....	5.6	12.6	240	13
1945.....	1.8	12.1	241	42
1946.....	00.6	14.9	290	204
1947.....	1.0	10.9	354	120
1948.....	1.1	12.5	381	165

¹ Source: The National Association of Building Owners and Managers, based on surveys conducted each year during the month of October.

² Source: Bureau of the Census, U. S. Department of Commerce, monthly releases on public merchandising warehouse occupancy. All data given are as of June 30, except for year 1928, figure is as of July 31.

³ George A. Fuller Company Index, a composite of 36 major cost elements, in three commercial type buildings.

⁴ Source: Department of Commerce.

started in urban and rural areas. From 1920 to 1929 about 20 percent of all nonfarm dwelling units started in each year were in rural areas. During the 1930's, rural areas accounted for between 30 and 60 percent of the new nonfarm housing units started, and in the current decade the percentage has ranged from a low of about 33 percent in 1944 to a high of about 45 percent in 1947 and 1948.¹⁶

Whereas the concentrated demand for all types of office space in the 1920's led to vertical building to a greater extent than ever before (of buildings whose primary function was to provide office space), the demand for certain types of office space in many suburban communities can be met today in buildings whose primary function is that of a retail store, a theater, or a post office. The recent growth in popularity of the 2-story single-structure shopping center, with stores at the street level and offices for local lawyers, dentists, insurance agents, and real estate firms in the second story exemplifies a shift of many office functions to buildings whose primary function and whose classification is other than that of an office building. The growth of professional and semi-professional consumer services in the present postwar decade probably will not result in an

expansion in the office buildings for these services to as great an extent as in the 1920's.

The Current Situation in Office, Warehouse and Loft Buildings

The postwar years have witnessed a vacancy ratio of 2 percent or less in office buildings and less than 15 percent in warehouses, yet the volume of new office, warehouse and loft building construction has remained low relative to total new construction and to general business activity, when contrasted with the 'twenties. Although there has been a very favorable vacancy rate for the last five years and income for existing buildings has been on the rise, the sharp increases in construction costs which have taken place have not been conducive to the building of new office, warehouse and loft structures. From an estimated average of 7 percent in 1944, the office building vacancy ratio declined to 2 percent in 1945 and .57 of 1 percent in October 1946, rising to .96 of 1 percent a year later and to 1.1 percent in October 1948.¹⁷ The warehouse vacancy ratio was under 13 percent in 1944 and 1945, rose to almost 15 percent in mid-1946 but dropped below 11 percent by June 1947 and rose to 12.5 percent in June 1948. Over the same time periods, the commercial building construction cost

¹⁶ Source: U. S. Department of Labor, Bureau of Labor Statistics, current releases.

¹⁷ Surveys conducted by National Association of Building Owners and Managers, results published in *Skyscraper Management*, November issues, every year. These surveys are sample surveys whose proportion of coverage in relation to the total amount of office building space available cannot be established, since the latter data are not available. Some fragmentary evidence exists, however, which indicates that the general magnitude of the figures derived from the surveys of the National Association of Building Owners and Managers is not inaccurate. A Real Property Inventory of New York City in 1934, conducted under the direction of New York City Housing Authority and the United States Department of Commerce, revealed about 140 million square feet of office space and a vacancy ratio of 21 percent in that city. The national average vacancy ratio found by the National Association of Building Owners and Managers' survey in 1934 was 26.9 percent. In recent years the NABOM surveys have covered about 60 million

square feet of office space in New York City, equal to 40 percent of the total amount found in existence in 1934. Since the post-1934 addition to the supply has been a few percent at most, the sample for New York City is a large one, covering probably better than a third of all office space. A Real Property Inventory of Cleveland, Ohio, for 1938, issued by Howard W. Green, gave only the number of office buildings and the total number and occupied number of rental units in those buildings, revealing that 19 percent of all units were vacant. The national average vacancy ratio turned up by the NABOM (on a square foot basis) in that year was 18 percent. A city-wide inventory of commercial property in Denver, Colorado, in 1946, conducted by the Bureau of Business and Social Research of the University of Denver, found zero vacancy in a total of 116 office buildings containing 5,913 million square feet of space. The October 1946 NABOM Survey in Denver covered 36 buildings containing 1,837 million square feet of space and also reported zero vacancy for that city.

index of the George A. Fuller Construction Company which had stood at an average of about 240 (1913=100) for 1944 and 1945, jumped to an average of 290 for 1946 and an average of about 340 in 1947, increases of 21 percent and 17 percent, respectively. In 1948 the cost index averaged about 380, an increase of only 11 percent, and from the fourth quarter of 1947 to the fourth quarter of 1948 the index rose only 7 percent. It is believed that rapidly rising construction costs and a lack of sufficient time to establish confidence in newly obtained high rental rates are primarily responsible for the low level of office, warehouse and loft building construction.

The high postwar level of general business activity has undoubtedly given rise to a need for more office and warehouse space than can be furnished in existing buildings in many cities.¹⁸ Part of the pressure for additional space is very likely being relieved by the conversion of old multi-family or large single-family residential buildings which are in blighted neighborhoods on the fringe of the central business districts of cities. Office building activity is also more moderated than in the 'twenties as a result of the modern trend of population movement toward the satellite cities and rural areas of metropolitan districts which has oriented certain types of services to the suburbs where they occupy space in buildings which are not primarily office buildings. This has reduced the pressures which were so great in the 1920's for vertical building in the center of the city. Furthermore, the regulation of securities issues has thus far

prevented and will tend to discourage the financing fiascos of the skyscraper building era.

There will undoubtedly be a number of large office buildings and warehouses put up, particularly in the expanding central cities of those regions which have recently had large influxes of population. It is quite likely that many of the office buildings will be put up by individual firms who will occupy a large portion of the space in default of buildings financed from other sources. Even in these fast growing areas, however, the development of large and fairly well integrated suburban communities will tend to spread the office space requirements among numerous, spatially dispersed areas, calling for small buildings. These smaller buildings can more readily find financial backing at the hands of local banks, insurance companies, and individuals.

The changing nature of the type and location of office building required today, the comparatively conservative financial climate of opinion, some uncertainty as to the reliability of the vacancy ratio due to large and declining government occupancy, and the continued rise in construction costs has served to deter a large volume of new office, warehouse and loft building construction in any postwar year. In addition, the oft-voiced and published reminiscences of the large vacancy rates and operating losses of the 'thirties loom large in the office building and warehousing industries, and serve as a basis for resisting quick expansion.

These influences were still of sufficient strength in 1948 so that a great boom in construction activity in new warehouse, office and loft buildings did not material-

¹⁸ Adequate data are not available to compare total office or warehouse space in use with gross national product. The occupancy surveys from which vacancy ratios have been obtained are based on large samples, but the sample coverage of the surveys has grown much faster than any reasonable increase of space proportionate to an increase in GNP. The

total coverage of the office space in annual surveys increased by about 50 percent between 1929 and 1937, whereas Gross National Product measured in constant prices would show about the same level in 1937 as in 1929, and a real GNP below that level in the interim.

ize. As gross national product remained high and construction costs began to level off, however, there was continued pressure for more office and warehouse space, and the resulting high rentals which could be expected induced an increase in 1948 construction of new warehouse, office and loft buildings, measured in 1939 prices of 38 percent over the previous year. The 1949 business recession reversed the uptrend and, according to preliminary data, physical volume was 9 percent less than in 1948. It is doubtful whether sufficient confidence will quickly be built up in the achievement and maintenance of the high rent levels commensurate with 1949-50 construction costs. With stabilized construction costs, however, and given a level of general business activity which makes for an extension of low vacancy rates throughout 1950, the two years following 1949 should again see increases in the physical volume of new construction of office, warehouse and loft buildings.

Technical Notes

Definition of New Commercial Construction. New commercial construction includes major additions or alterations and the new building of structures whose primary function is that of a retail store, garage, and/or service station, restaurant, office and/or bank building, loft building, and warehouse. It includes the types of structures listed below, grouped in sub-categories in accordance with further sub-classification of primary functions. Some of the building types, such as mess halls, are negligible in the totals of private commercial construction. The sub-categories of commercial construction and their building types are as follows:

Garages, Service Stations, etc.:

Public Garages (Gasoline, Battery, Greasing, etc.)

Bank Buildings:

Bank, Building and Loan Association Buildings and other Financial Buildings.

Office and Loft Buildings:

Office and Loft Buildings, Film Exchanges, Insurance Buildings and all other similar lofts.

Store Buildings:

Retail Bakeries, Barber Shops, Beauty Parlors, Cigar Stores, Department Stores, Dress Shops, Drug Stores, Food Stores, Show Rooms, Taxpayers and all other retail stores or shops.

Restaurant Buildings:

Automats, Bars, Beer Gardens, Cabarets, Cafes, Diners, Grill Rooms, Ice Cream Parlors, Mess Halls, Roadhouses, Roof Gardens, Tea Rooms, Taverns and all other restaurant or similar buildings.

Commercial Warehouses:

All Commercial Warehouses and Storage Buildings (Excluding Cold Storage, Grain Elevator, and Storage Silos).

Derivation of Commercial Construction Volume Estimates.

Commercial construction dollar volume is based on contract and permit data. The Department of Commerce receives contract award data gathered by the F. W. Dodge Corporation for all projects above a nominal minimum cost in all states but the eleven western states in the Rocky Mountain and Pacific Coast areas. For a given type of construction, a ratio between permit value for 48 states and permit value for the 37 eastern states, which is made available by the Bureau of Labor Statistics, is then computed and applied to the contract value for 37 states, to derive a contract value for 48 states. This contract value is adjusted for under-coverage and in order to eliminate the value of commercial-type buildings erected by public utilities. The latter value is based on data derived from other sources. The adjusted total contract value for particular types of buildings is then spread out over a number of months in conformity with timing patterns of construction which have been established, based on available field observation data, for the respective types. The aggregate schedule of commercial construction project expenditures yields the total dollar volume of commercial construction for a given month.

Estimated Consumer Expenditures in Stores, Restaurants and Garages. The Department of Commerce's detailed tabulation of estimated *Personal Consumption Expenditures by Types of Product* was the source of the data used in arriving at these estimates. Data for the years 1929-43 were published in the *National Income Supplement to the Survey of Current Business*, July 1947, and data for 1944-1947 in the July 1948 issue of the *Survey*. Personal consumption expenditures for the following classifications of products and services in the

above tabulations were included in the estimated expenditures in Stores, Restaurants and Garages:

All Durable Commodities

All Non-Durable Commodities:

Less: Meals purchased in hotels, dining and buffet cars, school fraternities, institutions, clubs and industrial fraternities and tips paid for service of the meals; Food furnished government and commercial employees, and withdrawn by nonfarm proprietors; Food produced and consumed on farms; Standard clothing issued to military personnel; Fuel (except gas) and ice

Selected Services:

Shoe cleaning and repair
Fur storage and repair
Cleaning, dyeing and pressing
Costume and dress suit rental
Net purchases from second hand clothing dealers
Watch, clock and jewelry repair
Barber shop services
Beauty parlor services
Net purchases from second hand furniture dealers
Upholstery and furniture repair
Net purchases from pawnbrokers and miscellaneous second hand dealers
Auto repair, greasing, storage, etc.
Book rental and repair
Radio repair
Photo developing and printing
Photographic studies

For 1948, the series derived in the above manner was moved on the basis of the change from 1947 to 1948 in the total consumer expenditures' series of the Department of Commerce. The annual series of consumer expenditures in Stores, Restaurants and Garages for 1929-47 was then recalculated as an index with 1929 as the base year. An index also was computed for the years 1921-1929 of the consumer expenditures' series to be found in the preliminary unpublished Commerce Department Tabulation of Disposition of National Income 1909-1944 (printed February 5, 1946) using 1929 as 100. The two index series were then linked for 1929 to form a continuous index series for 1921-1947, and the series on estimated consumer expenditures in Stores, Restaurants and Garages was extended back to 1921 on the basis of this index. Although the unpublished Commerce Department series on total consumer expenditures, 1909-1944, is not comparable with the new series starting with 1929 due to a lack of data for certain types of expenditures, it is felt that the year-to-year changes do indicate the movement of total consumer expenditures, which are heavily weighted by consumer expenditures of the type shown in the above list. Therefore, it is felt that for the purposes of year-to-year comparison, the method used to arrive at consumer expenditures in Stores, Restaurants and Garages for the years 1921-1928 is justifiable.

The Distribution of Labour Between Industries and Between Locations[†]

By COLIN CLARK*

IT is necessary to point out that (like other obvious truths which we are constantly forgetting) the primary purpose of industry is to satisfy human wants. From the way some people talk, you would think they believed that the primary purpose of people was to provide markets for the product of industry. We need not uphold an extreme doctrine of "consumers' sovereignty," justifying any degree of exploitation or insecurity of producers in order to confer small benefits upon consumers. But satisfaction of the wants of the consumer is the primary object of industry, in the sense that any industrial planning which ignores or denies these wants is certain to fail.

It does not come amiss therefore for economists to study systematically the manner in which the consumer spends his money under various circumstances. The most important variable whose effects we study is the level of real income. See Table I. At a given level of real income per head there are also, of course, interesting variations in consumption according to the number of children and the composition of the family, but these are outside our present study. The steady downward trend in food consumption as a proportion of expenditure, as real income rises, has been a commonplace for many years, though perhaps not many people realize the extent of the change in proportion as income rises from £1 to £3.10.0 per week per person in the family. The proportion of income spent on housing and clothing, however,

shows a slight tendency to rise. The rise in expenditure on manufactures is accounted for to a large extent by the single item of motor cars, and by no means counter-balances the falling expenditure on food. The most marked upward trend is on expenditure on services.

We must interpret this table, so far as we can, to give us some idea of the types of work which the consumer requires of the producer and is likely to require in the future as real incomes (we hope) rise. Before doing this we must first recollect that between one-third and one-half of the whole expenditure shown on food and manufactures, represents, not the labour of primary and secondary producers, but the costs of transport and distribution. These represent about one-half the final price in the case of perishable foods and the same in unusual or fashion-dependent types of manufacture, and will be nearly one-third of the retail price even in the case of non-perishable staple articles.

It will be noticed that all expenditure was reduced as far as possible to factor cost, excluding the effect upon prices of indirect taxation on protected production, and quasi taxation through marketing schemes.

By "naturally sheltered manufactures" are meant those goods which, through their bulk or perishability, are naturally protected from competition by imports, e.g., beer and newspapers, ice cream, furniture. Tobacco and petrol are considered separately as they are (and probably will continue to be) supplied almost entirely from imports. The serv-

[†] The material on which this article is based was presented to the Australian and New Zealand Association for the Advancement of Science at the Adelaide meeting in August 1946.

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ice industries being such a large group are subdivided into four classes, according to the type of labour which they employ. "Professional services" represent expenditure on medical and dental service, education, societies and associations, and

contribution to churches. "Mechanical services" expenditures, which employ a good deal of mechanical labour, are passenger transport in its various forms, and the repair and garaging of private cars. "Personal services" include only domes-

**TABLE I—FAMILY BUDGET: REAL EXPENDITURES: INDIRECT TAXATION AND EXCESS COSTS ELIMINATED:
QUEENSLAND 1939-40**
(*percent of total expenditure*)

tics and gardeners, and "Commercial and Postal services" all the remainder, e.g., cafes, boarding houses, laundries, entertainments, etc.

Annual expenditure on housing was imputed at 5 percent of the capital value of the house occupied. This is intended as an indication of the cost of maintaining the house plus the cost of replacing it, say, over a period of thirty years. A community replacing its houses on the average once every thirty years is improving its housing conditions rather rapidly, i.e., making a substantial net investment in housing. On a basis of maintenance costs plus minimum replacements commercially necessary, the figures would show an expenditure of only about 15 percent of incomes.

This housing expenditure when analysed down will probably consist of some two-thirds building trade labour (more in maintenance than in construction, at any rate in a community with wooden houses like Queensland), and one-third in the manufacture of building materials, nearly all of which are goods "naturally sheltered" as defined above, because of their bulk.

The manner in which this table has been drawn up fails to bring out one further point, namely, that through direct or indirect taxation the consumer is made to forego some of these objects of consumption which he desires, in order to support the necessary number of government officials. Whether this will make an increasing or decreasing demand on national resources in the future is not a subject for discussion here.

The outstanding conclusion to be drawn from the above analysis is that the sale of services, plus government services, plus the building trade, plus the transport and distribution element in the value of food and manufactures consumed, plus the production of naturally

sheltered manufactures, i.e., all the industries whose products are *not* capable of international trade, or even of internal trade over long distances, represent a large and increasing proportion of the national income. In other words, as the consumer becomes wealthier in the future he will demand to spend most of his income on untransportable goods and services which must be produced locally, and a declining proportion of his income on transportable goods.

Table II gives some indication of the levels of real income already reached, and prospective rates of growth. If we in Australia follow U.S.A., Canada and New Zealand, we shall soon be in the over 70s.Od. class. Australia has badly slowed down her rate of progress in recent years by fostering a number of uneconomic industries, but that is another story.

TABLE II—LEVELS OF REAL INCOME
(Reduced to shillings of 1939-40 Queensland purchasing power per head of population per week)

Year	Australia	Great Britain	New Zealand	Canada	U.S.A.
1886	28	29	.....	.....	29
1901	34	29	48	46	36
1913	36	38	.....	46	42
1929	42	43	53	51	55
1939	45	52	65	53	53
1945	47	61	70	71	72

Table III shows how labour was in fact distributed between industries in Australia, New Zealand, Great Britain and U.S.A. in recent years. Figures are given for four other countries selected to show the varying stages of industrial development. If we take a country like China, which is much less developed industrially than India, we find that between 75 and 80 percent of the population are employed in agriculture.

Some further points may be noticed in Table III. Australia and New Zealand have had to engage an unusually large

(though falling in Australia) proportion of the working population in transport. The economies in real costs of transport achieved in U.S.A. over the last twenty years are, however, remarkable.

The most interesting conclusion, however, is that Australia now has more manufacturing workers relative to total working population, than the U.S.A. The statistics in Table III show this to be so even for 1939. These Australian figures include all working proprietors and large numbers engaged in small-scale industries like baking, motor repairing and dressmaking. Even if we exclude them to get full comparability with American manufacture, the Australian proportion has risen from 20 percent of the working population in 1939 to 27 percent now, while the American proportion is practically back at the

prewar level. It is difficult to see how much further protectionism could go.

To make anything like a detailed prediction of the probable future trend of the distribution of labour between industries, we need to analyse our existing figures very carefully, and to relate employment to consumers' demand, direct or indirect, immediate or deferred. The family budget data already quoted show us the pattern of consumption for different levels of real income cross-classified by different family structures. Estimates are made of the probable change in real incomes over the next fifteen years and also of probable changes in family structure. A somewhat intricate cross classification enables us to build a tolerable estimate of probable aggregate consumption and investment in fifteen years' time. A much more tentative estimate is made

TABLE III—PERCENTAGE DISTRIBUTION OF NUMBERS IN WORK

INDUSTRIES	Australia		U. S. A.		Great Britain and Northern Ireland	New Zealand	Switzerland	Czechoslovakia	Japan	India
	1921	1939	1919	1938						
Agriculture, Forestry and Fishing.....	21.9	20.2	21.3	20.5	7.0	26.5	21.7	27.4	35.5	63.7
Mining.....	2.9	2.5	2.7	2.0	4.8	1.9	0.4	2.2	1.1	0.3
Manufacture.....	22.3	24.0	25.8	21.2	34.4	18.3	45.6	41.4	27.1	13.6
Building and Construction	7.8	6.1	2.8	2.7	7.1	7.6				
Transport and Communication.....	11.2	9.1	7.8	4.5	7.4	9.3	4.5	5.0	4.8	2.1
Commerce and Finance....	15.9	17.9	15.1	17.2	16.8	16.4	10.0	9.9	19.3	7.0
Services.....	18.0	20.2	24.5	31.9	22.5	20.0	17.8	14.1	12.2	13.3

of the probable distribution in, say, fifty or sixty years' time, by which date Australia may hope to have reached a population of 25 millions, Australia's optimum population as a primary exporting country. (Until we reach that level of population it appears that the balance of real comparative costs will still indicate Australia as an exporter of primary produce and as an importer of manufactured goods.)

The construction of Table IV involves some very detailed investigations into the structure of retail trade, and the analysis out of the composite heading of "General Stores" of the number of man-years involved in the distribution and servicing of certain commodities. For this work I am indebted to a Queensland University publication in course of preparation by Mr. E. W. Easton, and to Mr. R. H. Fields of the Queensland Bureau of Industry.

This complex analysis of the distribution of labour between industries is necessary before we can begin to consider its distribution between locations. Economic progress leads man through three stages, in which primary, secondary and tertiary industries are in their turn predominant. In a community predominantly dependent on primary industry, population must locate itself where the natural resources are available, with very little qualification. Manufacture may be more closely defined as "organized large-scale production of transportable goods." (The production of untransportable objects such as buildings and public works is not regarded as a branch of manufacture.) It is clear *a priori* (as it is also from historical evidence) that manufacture cannot exist without good transport facilities, and its location is determined largely by the balance of transport advantages and disadvantages. The tertiary industries

and services, on the other hand, produce objects which by their nature must be consumed where they are produced. These industries, therefore, by their nature must be located at or near to the point where the consumer resides (saving the rare cases where the consumer is willing to journey a long distance in order to receive some specialized service such as surgery). This means that, in effect, the community now has a much freer hand in the location of industry and population, if we care to use it. To a steadily lessening degree are we bound by considerations of either natural resources or transport facilities. In other words, we can, without in the long run causing any serious loss to ourselves, re-locate as we wish population engaged predominantly in tertiary industries. On the other hand, if we do nothing about it, they will locate themselves in the cities which have already grown up as large commercial or manufacturing centers. Just as no great economic loss is incurred in re-locating a predominantly tertiary population, no great economic advantage is incurred in allowing it to concentrate.

Some investigations were published in *Econometrica*, April 1945, under the title "The Economic Functions of a City in Relation to Its Size." The object of this investigation was to analyse the ability of cities of various sizes in U.S.A., Canada, Great Britain and Queensland, to provide to their own and the surrounding inhabitants a desirable range of tertiary services. The general conclusion reached was that a city of 150,000 population could supply all those needs.

Besides the economic, there are a number of other reasons for not wishing a city to exceed this size. One is the question of traffic. Who has yet asked himself what our traffic conditions are going to be like when every family owns

a motor car, as they will within twenty years at the present rate of progress. (Unless we are to assume that the production of a very expensive Australian motor car is an oblique attempt to solve the traffic problem.)

TABLE IV—PERCENTAGE OF WORKING POPULATION IN INDUSTRY GROUPS: QUEENSLAND

INDUSTRIES	1939	1960	Ultimate
<i>Primary:</i>			
Agriculture, Pastoral, Fishing, Forestry.....	28.29	21.56	10.82
Mining.....	2.55	1.07	.70
<i>Manufacture:</i>			
Building Material.....	1.77	.81	.31
Processing of Primary Products.....	3.03	2.79	1.50
Engineering, Railway Workshops.....	3.08	3.02	4.50
Other Manufactures for Direct Consumption.....	6.44	5.35	5.03
<i>Building and Public Works:</i>			
Building.....	3.89	5.25	8.03
Public Works.....	5.68	6.20	9.36
Transport.....	6.49	5.26	4.48
<i>Commerce and Finance:</i>			
Milk, Meat and Fish.....	1.33	.91	.91
Bread and Groceries.....	2.72	1.80	1.74
Fruit and Vegetables.....	1.06	.75	.75
Confectionery, Alcoholic and Soft Drinks.....	1.03	1.78	1.70
Tobacco.....	.27	.37	.37
Clothing.....	2.90	4.45	3.99
Furniture and Hardware.....	.83	1.35	1.22
Jewelry.....	.14	.21	.19
Chemists.....	.30	.44	.40
Motor and Petrol (Production and Dealing).....	1.31	2.08	1.87
Radio, Refrigerator, etc.....	.25	.34	.76
Newspapers and Books.....	.33	.47	.47
Commerce in Primary Products.....	.61	.67	.70
All other Commerce and Finance.....	1.15	1.71	2.24
<i>Services:</i>			
Government and Police.....	1.87	1.61	1.53
Education (Public and Private).....	2.53	3.52	3.16
Health.....	2.45	2.70	2.70
Other Professions.....	2.02	2.30	4.35
Entertainment.....	.93	1.03	1.42
Hairdressing and Laundry.....	1.01	1.06	1.81
Hotels, Cafes, Boarding Houses.....	7.32	10.10	10.60
Other Services.....	1.92	2.38	5.26
<i>Unrecorded and Semi-finished:</i>			
Goods.....	2.68	3.97	
Services.....	1.82	2.69	7.13
	100.00	100.00	100.00

Another consideration is the democratic one. A large number of governmental functions can be devolved to a city of this size. At the same time the ordinary citizen can take an active and intelligent interest in political and administrative affairs which he would find impossible in a larger community. For those who really believe in democracy and do not merely use it as a convenient catch-word, this is a very important consideration.

Australia will probably gradually move, as indicated in Table IV, to an agricultural population constituting only 10 to 20 percent of the whole working population. The whole rural population, including country storekeepers, doctors, teachers, postal and transport workers, etc., will probably, however, constitute 30 percent or more of the whole. This means that a city of 150,000 corresponds roughly to a region of 250,000. Dr. Andrews has carried out a preliminary demarcation (not yet published) of Australia into regions, such that the primary resources of each region would occupy the necessary rural population to give such a total.

A population of 250,000 would be a satisfactory unit for a large number of governmental services. (Tasmania's record of state government has been very good, particularly in the fields of health and education.) It has been calculated (Dr. Robb Smith, *The Lancet*, August 28, 1943), that a really adequate, comprehensive health service, including specialized hospitals for infectious diseases, tuberculosis, etc., can be organized for a population of 250,000.¹

The optimum size of the city is an important problem but by no means all. Of recent years increasing attention has

been paid to the concept of the "neighbourhood," "precinct," or other "cell" of which the city structure is built. The London County Council plan for rebuilding, though it is rightly being criticized for its timidity on the question of reducing the density of population, has made remarkable proposals for the revision of the city into "precincts."

In every-day parlance, these represent "shopping centers," together with some additional facilities. What constitutes an adequate population to provide a cell of urban development (or, for that matter, a rural township) in which the consumer can hope to find a reasonable array of retail and other services? The larger the population, of course, the larger the number and specialization of services given; but at the cost of increasing distances from the consumer's home. A careful balancing of advantages and disadvantages is called for.

The next step in the analysis, therefore, requires us to examine the size of the establishment necessary to give a satisfactory and economical retail or other service. For this again I am indebted to Mr. Easton's researches. See Table V.

Some town planners, in judging the desirable size of a cell, have concentrated their attention on the question of a primary school. A population of 1,500 might be expected to yield thirty children per year, constituting just satisfactory size classes for one primary school. But this line of reasoning assumes that in future all parents will be of the same mind on the question of religious education, which may or may not be the case. To allow for this consideration, or even to give some variety of choice of publicly-provided primary schools, a considerably

¹ Though it is quite irrelevant, it is hard to refrain from quoting a dictum by Dr. Robb Smith on the subject of national medical service. He considers that, unless the salaries of such a service were fixed very high, "two grades of

medical service would develop, an under-staffed salaried service made up of the least successful members of the profession to whom the public would apply for certificates, and the more able members of the profession who would have to be paid for their services."

TABLE V—ECONOMICAL SIZE OF BUSINESS ESTABLISHMENTS

Type of Service	Adequate Personnel for Business Establishment	Population Required to Provide Business for One Establishment			Percentage of Whole Working Population Thus Represented		
		1939	1960	2000	1939	1960	2000
Milk Delivery.....	1	700	900	1,000	.45	.32	.31
Butchery.....	1	390	500	500	.88	.59	.60
Bread Delivery.....	1	700	800	800	.43	.39	.39
Confectionery and Soft Drink Sales.....	1	1,700	1,200	900	.18	.24	.32
Tobacco Sales.....	1	1,100	800	800	.27	.37	.37
					2.21	1.91	1.99
Chemists' Shops.....	3	3,000	2,100	2,200	.30	.44	.40
Book and Newspaper Dealing.....	3	2,700	1,900	1,900	.33	.47	.47
Hairdressing.....	3	1,600	1,400	900	.58	.64	.99
					1.21	1.55	1.86
Garages.....	4	900	600	600	1.31	2.08	1.87
Radio, Refrigeration, etc.							
Sales and Service.....	4	4,800	3,500	1,600	.25	.34	.76
Grocery.....	4	500	800	900	2.29	1.41	1.35
					3.85	3.83	3.98
Entertainment.....	5	1,600	1,500	1,100	.93	1.03	1.42
Hotel, Cafe, Boarding House and Domestic	5	200	100	100	7.32	10.10	10.60
Greengrocery.....	5	1,400	2,000	2,000	1.06	.75	.75
Beer, Wines and Spirits.....	5	1,800	1,000	1,100	.85	1.54	1.38
Clothing Sales.....	5	500	300	400	2.90	4.45	3.99
Hardware Sales.....	5	7,500	5,000	5,500	.20	.30	.27
Jewelry Sales.....	5	10,700	7,100	7,900	.14	.21	.19
Building.....	5	400	300	200	3.89	5.25	8.03
Medical Center.....	7	4,500					
General Hospital (fifty beds).....		10,000					
Maternity Hospital (fifty beds).....		50,000			2.45	2.70	2.70
Mental Hospital (fifty beds).....		10,000					
Infectious Disease and Specialised Hospitals		250,000					
Primary School.....		1,500					
Secondary School.....		2,500			2.53	3.52	3.16
University.....		250,000					
Also providing some local employment:							
Public Works.....					5.68	6.20	9.36
Transport.....					6.49	5.26	4.48
Government and Police.....					1.87	1.61	1.53
Other Professions.....					2.02	2.30	4.35
Other Services.....					1.92	2.38	5.26
					17.98	17.75	24.98

larger population is desirable.

The following tabulation poses the balance of advantages and disadvantages in a highly simplified form. It is assumed that the desirable population density will be about fifteen per acre, the level of density found in most suburbs of Australian cities (barring those noted for their unpleasantness) at the present time. This corresponds to about twenty-five persons per acre of actual building land (after allowing for roads, public buildings, etc.) or, say, one-sixth of an acre per house. This represents about the amount of garden space which the ordinary Australian family prefers. No rigid uniformity is intended, some families having more and some less than the average.

<i>Radius of Neighbourhood Area in Yards</i>	<i>Population</i>	<i>Percentage of Working Population who will be Occupied in Serving Local Requirements in Industries Above Specified. (1960 Scale of Requirements)</i>
100.....	100.....	10.1
200.....	400.....	19.7
300.....	900.....	25.0
400.....	1,600.....	30.9
500.....	2,500.....	33.1
600.....	3,600.....	33.5
700.....	5,000.....	35.8
800.....	6,300.....	35.8
900.....	8,000.....	36.0
1,000.....	10,000.....	36.5

A desirable density being given, we can relate the population of the neighbourhood to its radius, i.e., distance of the furthest house from the shopping center. Most people will agree that a distance of 500 or 600 yards is as much as they care to traverse. We have assumed that in due course every family will have a car, but they will not necessarily wish to use it for all their daily business, and indeed if they did they would only create serious congestion at the shopping center.

A population of about 2,500 seems to be indicated. By increasing the population further we do not obtain any significant addition to the number of industries and services which can be locally conducted. Perhaps one of the most important industries outside the reach of such a population is the medical center which, according to Dr. Robb Smith, ought to have a personnel of seven (three or four doctors, dentists, nurses, etc.). Such a center should serve, in his opinion, a population of 6,000 to 8,000. One full-scale medical center might be provided for each three neighbourhoods, or it might be possible to subdivide the work further without too serious a loss of efficiency.

In very general terms, therefore, the best pattern of population location for Australia appears to consist of regions with some 250,000 population, comprising up to thirty or forty rural, and sixty or seventy urban neighbourhoods of 2,500 each.

And, while we are about it, we could quite well locate the urban neighbourhoods two or three miles apart from each other, separated by ranges of hills or other natural features. Each neighbourhood would provide a substantial proportion of its own requirements and employment and so the burden of transport would not be excessive. This arrangement would save all the problems of transport congestion in the center of the city. And such an arrangement of our cities would make them largely immune to atomic bombing.

It will be interesting to see whether we have the sense to make such an arrangement of our own accord, or whether we are going to wait for an explosion of some atomic bombs, probably placed in the middle of harbours and detonated by long distance radio control, to teach us our lesson.

Reserve Plant Capacity of Public Utilities and Efficient Use of Resources

By EMERY TROXEL*

PUBLIC utility commissions dealing with property valuations have a concept about efficient resource use that is generally called "used and useful" property. At least, a concern for efficiency is strongly suggested by the language of the concept, even if commission action seldom gives much content and effect to the concept. Making an investigation of reasonable earnings and compiling a property inventory (or accepting a compilation by the company), a commission obviously chooses or is involved in an implicit choice of the property on which a return is permitted. Attention to "used and useful" plant is prior to any controversy or reasoning about the method of property valuation. Apparently the "used property" is meant by most commissions to refer to the facilities from which output currently is obtained. In this simplified construction the notion of used plant may not have any significant dimension of efficiency beyond the immediate observational fact of actual plant activity. Indeed, a good deal of aged, obsolete and poorly organized plant seems to be accepted by commissions as used plant on which consumer payments are expected to provide a return. Apparently, the concept of "useful" property commonly represents more among commissions, and extends to property that is not currently turning out service but is available for anticipated production. In this connection the commissions have experiences with new but only partially used capacity, and plant "held for future use." This is the area of thought and action with which this paper deals.

More specifically, this discussion concerns reserve-plant capacity or what can be called, in a somewhat paradoxical fashion, a necessary, unused capacity. Obsolete equipment (i.e., technical means that can be economically replaced for immediate and future production), inadequate plant (i.e., a production unit that is too small, like an outgrown pair of shoes, for efficient use within the existing operations), and excess capacity (i.e., means of production that permit output beyond any efficient quantitative limit of operations) are not considered here. Indeed, the meaning—the content and conceptual character—of reserve capacity is the first subject. Then some recent experiences of commissions with plant-capacity limits are observed and summed up. Finally, an analytical section presents (a) some limitations of efficient plant choices that are relevant to public control and (b) several logical extensions of commission decisions that show some insufficiencies of present commission policy.

I

A generalized meaning, a concept of reserve-plant capacity, is needed so that a somewhat consistent classification of situations is maintained. This is neither an easy nor conclusive undertaking. For one thing, the concept is associated with the experiences of public utility industries and concerns inescapably the characteristically technical circumstances of service production and consumption. A meaningful reserve capacity can be altered significantly by changes in con-

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sumer behavior, plant technology, and managerial abilities. In some measure such an idea represents, furthermore, a translation of particular experiences into common denominators of experiences; consequently, the experiences (i.e., events, facts, literal histories) are altered, though they need not be revised so much that some observable connection between concept and immediate experience is lost. For another thing, there is the question of how many characteristics shall be identified. This choice involves both technical knowledge and social evaluation. At one stage in a person's or a group's (e.g., a public utility commission's) comprehension of dimensions it may represent an achievement that at a later time appears incomplete, poorly refined; comprehension of reserve-plant meaning cannot very well be given a finality. Meanwhile, too, the social significance of such a concept may expand in both thought and action terms; thus, the "need" for more deliberative and consistent evaluations may be shown. In any case the conceptual meaning of reserve capacity, as given and used here, is necessarily a tentative, limited, and somewhat introspective construction.

Some persons doubtless see little point in definitions of reserve capacity, just as they do not respect logical analysis of the nature of problems. Some of these believe strongly that common sense will see them through a problem. In general, public utility commissioners belong to this group that believes in sensing the meaning of such things as reserve capacity. Among these persons an immediate association with a case and its evidence is the only way to a true decision; a man

¹ In their decisions, which are summarized in the next section, the commissions scarcely ever say anything about the "used and useful" term. They simply do not examine this factor of earnings control so that it can be said to have anything approximating a definitive meaning. In this situation, where a meaning virtually must be assigned to the commissions' own language, the notion of reserve-plant

of good sense "knows" the truth when he "sees" it. Omitting what can be a lengthy discussion of methodology, I am content to say that experiences, reflections, insights often are necessary but scarcely ever sufficient, by themselves, in problem solutions.

The discussion turns to the meaning of reserve-plant capacity. This concept, as it is used in this paper, embraces the currently unused (or only partially used) plant capacity that is acquired and held in anticipation of a probable future need for further production. Such unused capacity may be represented occasionally in whole plant units or, more commonly, in partially used units; i.e., a plant unit may be used continually ("base load") or regularly ("peak load") but it still contains an unused or reserve capacity. The reserve capacity may consist of resources that are immediately ready for operations; or it may include resources, such as some kinds of land, that are only part of the necessary resources for further production. In the language of regulators such reserve-plant capacity for probable future production is unused but useful. Conceived in this manner and not derived strictly from regulatory experiences, the idea is clearly at odds with any literal understanding of the "used" part of the familiar "used and useful" phrase.¹ Yet the concept has an efficiency dimension; indeed, acquisition of some unused resources in anticipation of their need is often a necessity of maximum operating efficiency. Reserve-plant capacity is a variation of what the economist calls the optimum plant or resource combination.²

capacity does not conflict directly with anything that most commissions are doing or thinking. At best it conflicts with what an occasional commission does, and what others might do if a full expression of their experience pattern of thought and action were at work.

² More is said on this matter in a later section. Meanwhile the reader may wish to know that I am not speaking

(Footnote 2 continued on page 147)

Being familiar with the language and practice of public utility controls, some may believe that "stand-by" plant is a common and representative synonym for reserve-plant capacity. Yet, as the latter notion is defined here, stand-by plant does not always have the same meaning. In customary usage it is an idea that includes more than the reserve capacity as I define the latter.³ In company accounting the stand-by plant often includes equipment that is on the way to retirement, and is efficient only in terms of a short-run consideration of costs;⁴ or the equipment is beyond any foreseeable use in efficient production but is kept in the property inventory so that a larger investor return can be claimed. Gas-manufacturing equipment of a company now offering natural gas service, old-type equipment of many kinds, under-sized (inadequate) units, and other possible varieties of plant are included in the conventional category of stand-by equipment. That is, stand-by plant may include both obsolete and efficient equipment. Separated from the more inclusive notion of stand-by plant, the idea of reserve-plant capacity does not apply to long-used but now retired or virtually retired equipment. Instead it pertains to forward-looking situations wherein investment plans are arranged efficiently toward future service. It consists of equipment that can be utilized efficiently in regular and continuous service, even if it is not put to immediate use.

(Footnote 2 continued from page 146)

of a static concept of optimum plant. In fact, the reserve-plant capacity sometimes obtains a valid efficiency only in a dynamic and somewhat uncertain environment.

³ Others may wish to define reserve capacity so that it includes the wholly or partially obsolete units of stand-by equipment, but I prefer a distinction within the category of unused capacity.

⁴ Some plant, clearly obsolete for regular use and an inefficient investment choice under current technical and economic conditions, may still have efficient short-run limits of use. It may be the most economical way to handle occasional but monetary increases in demand, and some

Reserve capacity has an efficient place in connection with several technical conditions of production. Equipment breaks down without warning, storms disrupt service, efficient repair work is done somewhat irregularly, the efficiency of complementary resources (i.e., labor, management, and raw materials) is subject to variation. Either the firm produces a variable quantity of service with a fixed but fully used⁵ amount of capital, or it has plant capacity with which continuous production of service can be maintained. In view of time variations in consumer demand all the plant, however, is not in constant use, though all of it has a significant probability of consumer use. At any rate, if the company seeks a continuous quantity-time pattern of production (and implicitly assumes a quantity-time pattern of consumer demand), it needs more plant capacity than can be put to regular, load-carrying use.

Reserve-plant capacity may relate to social considerations that transcend the ordinary consumer demands or operating techniques. Although the condition certainly is not common among local governments, urban-transport capacity can be a means of avoiding metropolitan congestion. Indeed, all types of public utility services, extended ahead of population movement, reduce community congestion (especially in metropolitan areas); consequently, they are important factors in community planning. Usually the capacity of water systems is designed for

possible breakdowns of regular equipment. In these situations the saving in investment outlays on new equipment can more than offset the otherwise excessive operating costs of the old equipment.

⁵ As in other instances of "full employment," the word "full" is not easily defined. Essentially, I mean that the plant does not afford further production within the established time pattern of consumption. In the language of public utility engineering, the plant is just large enough for its "peak load." There is something more: the daily or seasonal time "peaks" of demand are not uniform; and, consequently, a further question is whether full use refers to an average or "normal" peak, or the highest such demand measurement.

some considerable measure of fire protection and an expanding area of fire-protection service. Clearly, the water-system capacity may reduce but not eliminate the probability of major fires; even an enormous amount of reserve-plant capacity does not reduce community fire risks to zero.

Yet the absence of any reserve capacity apparently increases the chance of large-scale fires (and results in higher insurance premiums) unless ordinary water service can be controlled readily or shut off; and such interruptions of water service simply shift the reserve-capacity question to another context. A place can be determined for some amount of reserve capacity toward community ends of fire protection, easy outward expansion, and reduction of population congestion; but the most efficient amount of this sort of plant capacity scarcely is open to an exact determination. Furthermore, the reserve plant, as in the case of fire-protection capacity of a water system, may never be put to full use; a generous calculation of capacity is made, but there is a low probability for a "Chicago fire."

A third reason for reserve-plant capacity concerns prospective demand increases among the ordinary consumers. Expecting demand changes to continue an upward course and knowing the obvious inefficiency of additional plant construction for each small addition (each added buyer, or each small physical unit of service) to aggregate demand, the firm adds "chunks" of plant from time to time and generally has capacity to serve additional demands. This provision for plant capacity does not refer to the so-called "off-peak" demand within daily or seasonal patterns of consumer behavior, though the demand for

this service may burst its bounds and become a determinant of additional total capacity.⁶ In general this demand determinant is conceived to be related primarily to secular and cyclical increases in consumer demand. In the secular sense, more plant capacity is needed because new uses of service are being discerned and developed; the electric industry, experiencing and anticipating technical conditions for demand increases, is a good, immediate example of this condition. In the cyclical case the reserve-plant capacity is chosen to serve all or some part of the demand increases that accompany a prosperity condition. Even if the demands for utility services commonly have an income inelasticity, they are not so inelastic in the income sense that, at prevailing prices, consumers do not demand larger quantities as their incomes increase. Under these conditions a reserve capacity avoids various managerial or regulatory improvisations of service rationing when demand conditions pass beyond the depression minimums.⁷

Choosing to have some amount of reserve-plant capacity, the community or commission (or whoever makes the choice) must recognize that investment outlays as well as some other complementary but more periodic expenditures are the minimum necessary costs of the supplements to plant capacity. Reserve plant clearly costs something; and these costs cannot be denied as consumer demand contracts or ceases to expand because a population or technological growth stops, or because a depression comes. For a time the condition of reserve-plant capacity is not reversible; it involves a long-term commitment of resources. The costs of these resources

* In some instances, too, special additions to plant capacity are needed so that further use can be made of the currently unused, off-peak capacity of basic plant.

⁷ As reasoned later, a failure to provide plant capacity beyond depression-time demands may limit a prosperity development in connection with industrial production and new housing.

can be recovered only by charging prices; and, as a general prospect, investors can be induced to make such a resource allocation only if the prices and revenues have significant probabilities.

More specifically, there is no double or shiftable choice in the situation. If, for example, enough plant is available to satisfy all demands at or near the top of the prosperity phase, then more than enough capacity is on hand to satisfy demands during a depression though, as a happy coincidence, an upward secular change in buyer demand (e.g., electricity demand during the 'thirties) may "take up the slack." This does not mean that a plant must be large enough to satisfy all demands at all times; rather, it means that commission policy cannot be shifted opportunistically to the best immediate choice and still be an efficiently arranged policy. Indeed, the general rules of efficient resource use, including a projected benefit-cost equation of additions to reserve-capacity, apply to regulatory policy quite as much as any case of resource-use control; at least those who want to make "good" choices should puzzle over efficiency relationships, even if discontinuous decisions, large indivisibilities of plant units, and improbabilities of precise measurements deny achievement of neat equations and leave, at best, only approximations of logically constructed relationships. More is said later on a commission's relation to an efficient resource allocation.

Recognition should be given to the fact that company managers make most of the actual choices about the timing and magnitude of reserve-plant capacity. Commissions, lacking staff and possibly a serious interest, do not take commonly an active part in these decisions. Perhaps many of them, organized as they are now, have quite insufficient abilities

to conceive the physical and financial planning of plant capacity relative to consumer behavior and social needs. At any rate the private management is left largely to its own choices or, what is more to the point of regulatory responsibility, it is expected to make these decisions. In this connection we should recognize that the management deals, at best, with probabilities rather than certainties, and the decisions cannot always be infallible. Regulators can worsen the problem with strict and hindsighted judgments, discerning deviations that even the management never sought and that do occur, in any case, after the investment choices. Commissions can participate in the planning and use of plant capacity; and doubtless their investigations and suggestions in these matters afford one way to broaden the presently narrow perspective of regulatory thought. Yet, if they do not participate directly, they can create a peculiar inefficiency of resource use by cracking down on "mistaken" choices, and thereby make managers more cautious in future choices.

Meant to be a part of an efficiently planned system, reserve-plant capacity is not a fixed percentage of total plant capacity. This takes the discussion back to the point that additions to plant capacity, involving large indivisible units for managerial and technical reasons, are not efficiently made if they have a perfect integration with immediate changes in community needs or consumer demands. An efficient process of decision-making about plant organization often calls for discontinuous changes in the plant. An efficient choice may be some minimum technical addition, e.g., an electric transmission or distribution line to a residential area with which a minimum complement of poles, transformers, etc., is included. In any case

there is a managerial minimum below which the decision-making is considered too costly, too inefficient. Thus, the reserve-plant capacity "jumps" with plant additions, though each addition can be conceived efficiently in terms of prospective developments in technical, community, or consumer demand conditions. Later, the projected developments are expected to use up the reserve capacity. Then, sometime in the more distant future, another lumpy addition to plant capacity is considered.

As noted already, reserve capacity is not necessarily a part of the plant that is immediately ready for use. An efficient planning of plant development may require acquisitions far ahead of their prospective use. Some of the best examples of this condition concern acquisitions of land. Some industries and firms expect, of course, to realize more efficiency from such acquisitions than do others. Engaged in gas production as well as gas transmission and possibly gas distribution, a natural gas firm wants to be assured of a supply source; and at the same time it wants to minimize the total costs of gas production. Consequently, it acquires leases or ownership in much unproven or only partially proven areas, and does not wait to make larger expenditures on fully proven or developed land. Saying that such assets are "held for future use" and that the costs are not reasonable for the present, a commission can miss a significant characteristic of efficient plant development.

The concept of reserve-plant capacity is separable from the idea of excess capacity. It refers to unused plant whose use is expected but not absolutely assured, and whose installation time is conceived to be arranged efficiently prior to immediate use. On the contrary, the concept of excess capacity is an extension, given some minimum of managerial

ability, beyond such an efficiently planned arrangement; it is represented by plant-capacity increments beyond the limit where expected benefit increments exceed or equal cost increments. Controlled exclusively or primarily by immediate and often superficially perceived experiences, some persons (including apparently many public utility commissioners and consumers) cannot very well comprehend a currently unused plant apart from excess capacity; their mental trouble is a close confinement to actual events. Admittedly any actual measurements involving the manageable character of the data as well as the "permissible" intelligence of company managers are sufficiently inexact so that a clear, indisputable demarcation between reserve capacity and excess capacity is not feasible. Yet, even if these difficulties of decision-making are in the problem, they still do not justify an "excess" label for all currently unused plant.

The above concept of reserve-plant capacity is not altogether apart from economic thought, though economists generally do not have much to say directly on this subject. At any rate it is not completely apart from what Professor W. H. Hutt, a South African economist, says on "idle" resources. One of his categories, pseudo-idleness, seems to embrace the one that I am delineating.⁸ He says:

"... there are resources which perform their most wanted services through their mere passive existence—the service of 'availability.' The resources concerned might be capable of being hired out for certain other purposes, but they would then directly lose their availability for some special task (which entrepreneurs are prepared to bet will be wanting their services later.)"⁹

Indeed, these resources can give satisfaction simply through the knowledge "that

⁸ *The Theory of Idle Resources* (London: Jonathan Cape, 1939), pp. 28, 57-70.

⁹ *Ibid.*, p. 63.

they are there" as in the instance of armament or fire-fighting equipment. And he recognizes that indivisibility of an "efficient unit of specialized equipment" is a common explanation of pseudo-idleness in the face of demand fluctuations.¹⁰ To those who rely on direct observations and experiences, the fact of idleness is more apparent than true.

II

Public utility service is associated with long-standing traditions to which the idea and fact of reserve-plant capacity are relevant. Having ethical significance and transcending in any case the immediate technical conditions of production, the concept of "serving all who come" is prominent in public utility history. This concept is rooted in the common law and represents, in general, a social obligation beyond what a private management chooses strictly for its firm. Expressed in "modern" language, this concept means satisfaction of all consumer demands at prescribed prices. And some anticipation of service seems to be implied; otherwise, consumers cannot be served as soon as they come. Similarly, the corollary concept of continuous service is well established and presupposes provision for extra plant capacity so that at least some types of interruptions are avoidable.

Commissions naturally are cognizant of the custom of serving all who come. In a "new" market situation, where plant and output expansion is contemplated beyond previously prescribed geographic or use limits, the rule may not be invoked; and the private choice can control provisions for future service. In

the old market, enfranchised and marked out, the company is more directly bound to serve all. Yet, apart from new and old legal situations, distinctive service obligations are commonly imputed to public utility firms; and regulators occasionally speak in the manner of the Massachusetts Department:

. . . the public which created the utility has the right to anticipate that it will be providently managed and conducted to the end that there shall be neither diminution in quality nor interruption in the continuity of service.¹¹

Even the managers of utility companies appear to have a sense of service obligations that is not found in other industries. Such a conscience about service performance, limited to be sure by private considerations, seems to be manifested in managerial embarrassments by long lines of waiting customers, improvised rationing, interruptions from breakdowns, and other possible marks of deficient service. In reality the commissions are quite reliant indirectly on some measure of managerial conscience as a goad to plant expansion and efficiency.

Looking for colorful or well-organized responses of commissions relative to reserve-plant capacity, we can select a few opinions from the total flow. This is not the main approach here. Instead, commission decisions, taken as they come from issues of the *Public Utilities Fortnightly* and representing variations in expression and thinking, are classified for the last decade. The result is a sizable sample, a sort of cross-section of commission actions though I hesitate to say "strictly representative." The main point is the regulatory treatment of used and useful property, for the commissioners do not have a concept of reserve capacity as this is defined in the fore-

¹⁰ Hutt applies another concept of idleness, "withheld capacity," more directly to "natural monopolies" (*ibid.*, pp. 146-173). As he uses the idea, it refers to a monopolist's manipulation of plant use toward output and profit control; in this sense it does not apply to the limits of the discussion here.

¹¹ *Re Boston Consolidated G. Co. (Mass.)*, 30 P.U.R. (N.S.) 260, 265 (1939).

going section. Taking the regulatory action at first on its own terms, we can comprehend something about the way in which the plant efficiency and the optimum operating scale are treated. Then, some inferences can be drawn on what kind of regulatory treatment can be expected for more refined efficiency concepts. If regulators do not (and most of them don't) give attention to the meaning and content of used and useful property, we surely can infer that they are not likely to think about reserve capacity. Or when only the property in immediate use is considered useful and all else is excluded from the reasonable inventory, we may infer that, at best, attention to reserve capacity is incomplete.

The decisions tabulated in Table I, which were decided during an eleven-year period beginning in 1938 and ending in 1948, cover a considerable range of general economic conditions. The sample period begins in the tail-end of depression, goes through a war, and ends in a postwar prosperity—from generally abundant plant capacity in the late 'thirties to widespread shortages of plant capacity and managerial rationing in the late 'forties. In the beginning the companies could serve all who came, and more; in the end there were dilapidated busses, some "brownouts" for electricity, and waiting lists for gas and telephone installations. These decisions on used and useful plant are drawn from rate cases where inventory questions are most likely to be asked. If such questions are asked at all, they seem most probable when each case involves basically a commission challenge to existing earnings or a company demand for additional earnings.

The summary in Table I is not final or perfect. For one thing, it covers a limited range of decision-making and is,

TABLE I—DECISIONS OF PUBLIC UTILITY COMMISSIONS ON PROPERTY INVENTORIES IN RATE CASES, 1938-1949¹

<i>Decisions</i>	<i>Number of Decisions²</i>
1. No reference whatever to unused, stand-by, or reserve capacity.....	79 ³
2. Used and useful property mentioned; all property apparently included but no explanation given.....	32 ⁴
3. After commission study, full allowance given for stand-by, reserve, and other unused capacity	8
4. Partial valuation allowance for reserve, future-use plant.....	2
5. Unused plant excluded from inventory, even if held or being built specifically for future use.....	14
6. Elimination of some property in name of excess capacity.....	2
7. Allowance for admittedly obsolete plant, but no mention of reserve plant ⁴	2
TOTAL NUMBER OF DECISIONS...	139

¹ Only the cases reported in the *Public Utility Fortnightly* were examined. These cases extend inclusively from volume 27 to volume 76 of the *Public Utility Reports*.

² The following kinds of cases were excluded: court, motor carrier, railroad, types of prices (e.g., tokens for local bus fares), discrimination between buyer classes, rates for a single-buyer class, dismissed for want of jurisdiction, temporary or interim rate orders, accounting, sliding-scale situations, and "negotiated" rate changes.

³ Placed in these categories according to what commission opinions seem to contain, some of these decisions may very well belong elsewhere in reality. At least some uncertain allowance should be made for the fact that commissioners, often lacking high qualities of articulation and thought composition, do not reveal all they are thinking and doing.

⁴ These doubtless are not the only instances where obsolete property is included; rather, they are the only ones where the commissions recognized overtly the obsolescence and still included the property. Many of the cases doubtless contained a good deal of neglected obsolescence of property.

at best, one of several possible samples; the time range can be longer, and more decisions can be collected for the chosen time period. The decisions are discerned, moreover, from the final, edited opinions; no attempt is made to go behind the opinions and gather special reports and testimony for each case. Furthermore, these opinions, like any collection of commission opinions, vary a great deal in clarity and detail; some opinions speak directly to the point of the used and

useful inventory, while others afford evidence for only fairly "loose" inferences of regulatory choices. For instance, the first category in Table I, containing opinions wherein no references seem to be made to used and useful property, might not be quite so prominent if commissions were more systematic and expressive.¹²

Measured by what is shown in Table I commissions do not scrutinize commonly the property inventories and strive to allow returns on only the efficiently planned or arranged plant. They are content apparently to take the meaning and quantity of used and useful property for granted. A majority of the decisions (79) contain no evident references to used and useful, stand-by, or reserve capacity. In the second category the commissions seem to use the words, "used and useful", as simply language—mere verbalisms to which no significance is attached. Indeed, the first three categories, containing 119 decisions and representing more than four-fifths of the decisions, suggest strongly that the regulators do not have much interest in plant efficiency—in careful attention to the limits as well as the technical types of plant capacity.¹³ The inventory of efficiently arranged plant logically may be prior to the property valuation, but the valuations as well as other dollar sums are primary in the common earnings case.

These directions of commission thought are not affected significantly by the size of the company that is considered. About 25 decisions in the sample concern small, village-size companies; and they are predominantly in the first class.

¹² These comments do not mean that I am dissatisfied with the decision sample and my perceptions of commission decisions. Quite the contrary. Yet I do not wish to claim that an indubitable objectivity is achieved, that another student, examining the same decisions, can be expected to arrange precisely the same table.

Yet, even if these decisions are excluded, the indifference to plant efficiency still is dominant. To achieve more efficient use of limited regulatory means, commissions understandably give more attention to large-company cases; and, being in this state of mind, they can go further and apply more effort to the study and measurement of plant efficiency. Nor does a significant change in commission effort show up when the decisions are classified according to rate-level increases, decreases, and no-changes. Judged by their written opinions, the regulators simply do not probe the meaning, try to make measurements, or even become doubtful about plant efficiency. Consequently, reserve-plant capacity, as a special dimension of optimum-plant organization, presumably is a possible refinement that does not interest them.

Commission reasoning, represented mainly by the fourteen decisions in the fifth category, occasionally does reject unused property that, in some possible instances, may pass for reserve-plant capacity. These exclusions usually occur under a simple, immediate "use" standard of efficient plant. The Missouri Commission, excluding some property in one of these decisions, says, "As a general policy . . . a rate base should include only such property which is actually in use or use of which is imminent."¹⁴ Such an immediate or imminent-use rule doubtless accords with a typical commissioner's strong faith in experience as the real source of truth. But does it measure the efficient limits of plant capacity? And what is imminent? Such a rule seems to provide easy solutions, and consequently may reflect

¹³ As suggested in note 3 of Table I, some allowance may be made possibly for commissions that do not speak about property inventories but actually have thoughts about them. Even so, the silence is an indication that other matters have higher places in their thoughts.

¹⁴ *P.S. Com. of Missouri v. Kansas City P. & L. Co. (Mo.)*, 30 P.U.R. (N.S.) 193, 213 (1939).

the inefficiency of commission regulation more than the inefficiency of utility plant-development.

In several cases the commissions clearly encountered shortages of plant capacity, but still ordered price reductions that quite clearly could not be reconciled with the demand-output disparity. These conditions, particularly in natural gas service, began to occur during the war. In these instances the commissions had opportunities to ask and deal with questions about optimum-plant capacity; but apparently nothing of this sort was done. Instead, the standard accounting procedure in reasonable earnings cases was followed, and a rate reduction usually was ordered. A primary part of these problems still was unsolved. The Utah Commission, saying more than most of them, did beg for further gas-field exploration:

"It appears from the evidence that in order for the customers of the company within . . . Utah to be secure in its future gas service, that it is highly desirable that the company develop new gas reserves as rapidly as possible."¹⁵

In economic thought a demand-output disparity is a mark of inefficient use of resources; and it receives further attention in the next section.

Encountering shortages of plant capacity, commissions presumably should hold up the tradition of serving all who come and require companies to invest in additional plant capacity. Indeed, the commissions can study the need for plant capacity and participate in the choices of capacity limits. No such activity is revealed in this sample of decisions. They accept the explanations and await the discretionary choices of management. Only one commission decision is unfavorable to a company on

this point. Dealing with a gas-manufacturing company that did not have any apparent plan for plant additions, the Maine Commission said: "The company should provide better protection to its customers in case of breakdown . . . These people have invested in gas-type heaters at considerable expense and they find themselves in a precarious situation."¹⁶ Then the Maine Commission withheld a rate-level increase until the capacity condition was corrected.

III

In the beginning this paper gives a meaning, an essentially functional meaning, to reserve-plant capacity. Then the commission experiences, or more literally, the absence of direct commission concern for reserve-capacity problems are classified. Now the discussion returns to logical constructions of thought and becomes a continuation really of the meaning of reserve-plant capacity. At first some general dimensions of efficient reserve capacity, representing conceivable extensions of regulatory thought, are described. Thereafter, several consequences of commission behavior, presented as logical extensions of the past decision patterns, are arranged to show some inadequacies of regulatory policy.

Looking to an optimum use of resources and an optimum benefit-cost relationship, we should recognize that the amount of reserve-plant capacity is not without limitation. Put in another way, the installation of reserve capacity affects the objective of minimizing the total costs of public utility operations. Availability and continuity of service are beneficial, but they also require resource allocations. And, in interrelationship, some benefits of plant availability and service continuity also take directly the

¹⁵ *Re Mountain Fuel Supply Co. (Utah)*, 75 P.U.R. (N.S.) 52, 55 (1948).

¹⁶ *P.U. Com. v. Bangor G. Co. (Me.)*, 74 P.U.R. (N.S.) 23, 28 (1948).

form of cost economies, e.g., installation of reserve capacity so that, in breakdowns, complementary equipment is not forced into idleness, or plant construction prior to consumer or community "demands," so that investment costs are economized. Apart from these direct interrelationships, the basic problem concerns conflicting ends: minimized total costs or prices, and immediate service for all who are willing to buy. With enough plant capacity for some assurance of immediately available and continuous service (satisfaction of all who come to be served at the prescribed prices), the total costs are higher than if no reserve capacity is available. This is a kind of regulatory problem in which both logical analysis and social evaluation can contribute to the solution.

The choice between these conflicting ends is not a matter of excluding one and devoting attention wholly to the other, but is a problem about an efficient, "balanced" relationship. An extreme choice of no reserve capacity is not sensible because benefits surely can be conceived for some minimum plant availability and service continuity; similarly, the other extreme of unlimited reserve capacity (i.e., provision for all possible consumer demands and sources of service interruption) is insensible because no significance is attributed to investment and maintenance costs. Between these extremities the "manager," wanting to reach or approach a well-conceived solution, is confronted with multiple probabilities.¹⁷ If, in the planning, the cost-capacity relation is taken to be immediate and certain, probabilities

still must be assigned to various demand increases, community "needs," weather effects on plant operation, and mechanical breakdowns. At the same time probable values are assigned to benefits from successive, manageable increments in plant availability and service continuity. When the probability of "disrupting" events or the probable values of benefits increase, the "manager" can justify further investments in extra plant capacity.¹⁸

The choice between the conflicting (though occasionally complementary) cost and service ends may be complicated further by the distribution of the costs and benefits. Beneficiaries of plant availability and service continuity may not be charged all or, in some instances, any part of the costs. Plant provisions for anticipated demand increases are, in the customary accounting, costs for buyers who are already served. Such a cost distribution may cancel out partly in a continuing expansion where present buyers owe something to still earlier buyers. A more complicated incidence of costs is illustrated by the fire-protection and community-expansion capacity of a water system. Affected by politics the assignment of these costs may be diverted away from property owners and toward more immediate water consumers. Similarly, consumer classes of a system may share costs of reserve capacity in ratios that are not proportionate to their benefits. These distributions of cost increments relative to benefit increments are further and puzzling parts of the whole allocation problem.

¹⁷ This is not the place to write on the logically organized meaning of the probability concept. A comment beyond probability "theory" should be added, however: the case before us concerns what the men, involved in decision-making, think the probabilities are.

¹⁸ Expressed in terms of a single "maximizing" decision, the increment in benefits, adjusted by the probability values, must exceed or equal the increment in costs. In formal

terms: $\Delta TC \leq \Delta TEB \cdot P$ where ΔTC is the certain addition to total cost, ΔTEB is the expected (most probable) addition to total benefits, and P is the probability, as conceived by the decision-maker, that ΔTEB or more will occur. If the cost items are fragmented and if time variations and other conceivable considerations are introduced, a more complex statement of the relationship can be made but an important point, the probability adjustment or benefit expectations, remains.

Dependent on "authoritative" choices, the development of reserve capacity requires some one who can make decisions. Plant capacity, necessitating forethought and investment, is not something that follows as soon as reasoning is logically organized. In the public utility case of reserve-plant capacity a valuation must be placed on each conceivable addition to plant availability and service continuity, probabilities of such matters as weather or mechanical disruptions and demand changes must be conceived; and plant costs, integrated with output prospects, must be projected. Basically, someone must balance the alternative ends of minimum total costs and service to all who are willing to buy. Consumers, expressing their demands for service, cannot be expected to attach much significance to plant availability even if they are among the primary beneficiaries. And the managers of utility firms, looking to profitability and security, seem likely to lean to the cost side of the choice, and modify the anticipated benefits of service availability and continuity.

Established to be a thinking and reviewing body between the extremes of buyer-seller acquisitiveness, a commission is capable of perceiving a more beneficial relationship of costs and reserve capacity than is available generally from private calculations. Perception of higher probabilities of plant capacity shortages, assignment of higher values to plant-availability benefits, a particular attention to future community needs (e.g., fire-protection capacity), examination of consumer incidence of reserve-capacity costs—these are all ways in which a commission's calculations can improve on private measurements. That these opportunities for a broadly conceived efficiency of resource use are not embraced by regulators is plain enough from their decisions. Naturally, as property rights

stand now, commissioners cannot work independently of private controls, ordering and achieving investments in reserve capacity as they choose. Nor should they disregard the managing abilities, the know-how of those who now run the enterprises. Yet a commission, wanting to work toward continuous service for all and having an interest in socially-conceived efficiencies of operation, can scarcely justify leaving choices of plant capacity exclusively in private hands.

Dealing with necessary but unused plant capacity, a commission needs a special construction of an optimum resource combination. Among economists the social optimum for a firm (or a group of firms, taken together) is stated commonly as simply the factor combination for which average cost is at a minimum with a given plant. Yet, since this concept explicitly refers or can be inferred to apply to actual output, it is inadequate in a case of reserve-plant capacity. Expected commonly to have some available plant whose use is associated with probable future events and benefits, a public utility firm does not operate at the point of lowest average cost with the given plant. Instead, the firm makes efficient use of available plant only when it plans to have decreasing average costs beyond the limit of actual output. That is, the extra plant capacity, having a relevance to future production and being separable in its functional character from the immediately productive plant, is not correctly turned into decreasing cost values which are used, in turn, to prove or infer an inefficient resource allocation.

This distinction in decreasing-cost situations, which is based on a distinction between actual and potential output or, what is more to the point, between immediately used and available plant capacity, can be illustrated with Figure 1. Let AC_a and AC_b , arranged as

simple continuous functions,¹⁹ represent the average costs where two different amounts of plant capacity are given. Let AR represent, as a simplified and continuous demand function, the quantities that buyers are willing to take now.

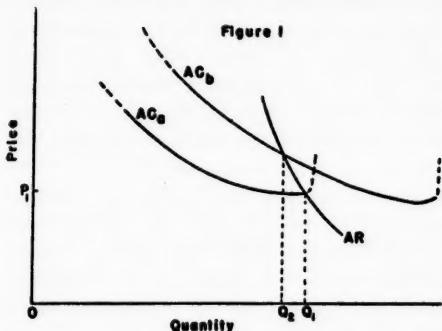


Figure I

the reasonable total costs are a larger sum (and the reasonable price level is higher) than if the costs of reserve capacity are not assigned to present operations. When $AR = AC_b$ in the regulatory process, the firm "recovers" the reserve-capacity costs prior to full plant use. A commission can decide to defer these costs to later operating periods, and thereby affect the regulatory concept of the AC curve; indeed, an understandable social choice can be an assignment of some or all such costs to the consumers who are expected, as time passes, to benefit from service availability. Yet there is a large difference between deferment of reserve-plant costs and a complete disregard or uncertain regulatory treatment of them.

Although $AR = AC_b$ in Figure I illustrates the generalized equation of reasonable earnings, it does not deal with the optimum limit of reserve capacity. Indeed, a concept of optimum calculation of reserve capacity, affording an opportunity in public utility regulation for marginal analysis, can be distinguished sharply from measurement of reasonable earnings. Meaning to eliminate monopoly profits and requiring service performance essentially on an "all or nothing" basis, commissions commonly seek an equation of total cost and total revenue (i.e., they seek $AC = AR$, though the AC and AR are subject to special and even peculiar regulatory meanings). If the same thought pattern is followed for the reserve capacity, they want to equate the aggregate expected benefits (adjusted downward in probability terms as indicated in footnote 18) of this capacity addition to the aggregate additional costs. But this does not economize the investments in reserve capacity; and it does not economize the costs that are charged to present consumers. The efficient limit is fixed by an equation of net marginal benefits and

Meaning to equate immediate consumer demand to minimum average cost, the commission seeks $AR = AC_a$ at Q_1 . But when service benefits are projected beyond AR so that the probable values of service availability and continuity are recognized, a plant choice such as AC_b becomes more efficient than AC_a . In this case $AR = AC_b$ above the minimum point on AC_b , and actual or immediate production takes place under decreasing costs as this term is commonly conceived.

Another point not to be missed in connection with Figure 1: the AC_b curve includes the costs of reserve-plant capacity—the largely fixed costs of maintaining a capacity beyond immediate needs. If this is not the case, then another AC can be conceived that does include these costs that occur at outputs prior to the minimum point of AC_b . At the same time we should recognize that AC_b , as it is conceived here, presupposes transfers of these costs to existing buyers. At Q_2 ,

¹⁹ To approximate the real character of managerial (or regulatory) comprehension of cost behavior, I prefer a discontinuous rather than continuous cost function. This choice, being less familiar and requiring explanation, is not a "necessary" condition of the analysis here.

marginal costs.²⁰ That is, apart from probability considerations, reserve capacity is extended so long as the successive net increments in total benefits exceed or equal the successive increments in total costs.

The net benefits of successive, divisible increments in reserve capacity are related to the immediate price effects of reserve-capacity costs. This interrelation of costs and benefits is associated directly with the common pattern of reasonable earning control. Not only does reserve capacity require operation above the minimum average costs of a plant, but also the costs of this capacity are charged to immediate consumers. Thus, as shown in Figure I, an increment in reserve capacity puts the reasonable price level above P_1 . In so far as the demand is not perfectly inelastic, a price above P_1 means that some losses of benefits follow from curtailments of current consumption. Such benefits of foregone consumption are deductible from the aggregate benefits of an addition to available plant. Thus, when reserve-capacity costs are assigned to immediate consumers, the marginal benefits and marginal costs are interrelated and the optimum capacity is limited by regulatory practice.

Neglecting the existence of reserve plant and missing consequently the foregoing characteristics of this special case of resource use, commissions can go on to make inefficient decisions about reasonable earnings. They can order price-level (earnings) reductions when demand increases are experienced and additional plant capacity is not installed immediately. The demand increase or success-

²⁰ Recognizing an uncertainty of benefits and making consequently an adjustment relative to the probabilities of benefit expectations, the decision-maker seeks an equation of $MC = MB \cdot P_b$ where MC is marginal cost, MB is an expectation of net marginal benefits, and P_b is the probability that MB or more will occur. If an uncertainty is recognized, too, for MC , then the maximizing equation becomes $MC \cdot P_e = MB \cdot P_b$ where P_e is the probability that MC or less will occur.

sion of increases may come so swiftly that, momentarily, the company cannot plan and carry out plant construction before the reserve capacity is reduced or even exhausted. Or the companies, as in a war period, cannot obtain additional equipment even if they are quite willing to invest in it. Guided by the immediate relationship of total cost and total revenue, a commission turns the utilization of reserve capacity into price reductions and implicitly denies provision for service to "all who come."

When reserve capacities of utility companies were used up during the Second World War, commissions often ordered price reductions or customer rebates. Indeed, in the natural gas and telephone industries, as well as parts of the electric and other public utility industries, demand at prevailing prices exceeded available supplies; yet price reductions were ordered with the result, presumably, that the demand-supply disparity increased. Taking a simple accounting perspective of reasonable earnings calculations, the commissions believed that price levels (or simply earnings levels in the rebate cases) for public utility firms should be lower if the current or recent total revenue exceeded the current or recent total cost.²¹ The established pattern of earnings control was preserved.

Not inquiring beyond an immediate cost-revenue relationship, a commission clearly can turn reserve capacity to the end of price reductions rather than service availability and continuity. If the plant capacity is given, selling prices

²¹ Cf. *City of Two Rivers v. Commonwealth Tel. Co.* (Wis.), 70 P.U.R. (N.S.) 5 (1947); *Re Mississippi River Fuel Co.* (F.P.C.), 63 P.U.R. (N.S.) 235 (1946); *Re Michigan Bell Tel. Co.* (Mich.), 62 P.U.R. (N.S.) 77 (1945); *Re Arkansas P. & L. Co.* (Ark.), 55 P.U.R. (N.S.) 129, 174 (1944); *P. S. Com. v. Springfield G. & E. Co.* (Mo.), 53 P.U.R. (N.S.) 95, 104 (1944); *Re Cities Service G. Co.* (F.P.C.), 50 P.U.R. (N.S.) 65 (1943); *Detroit v. Panhandle-Eastern Pipe Line Co.* (F.P.C.), 45 P.U.R. (N.S.) 203 (1942); *Detroit v. Detroit Edison Co.* (Mich.), 59 P.U.R. (N.S.) 1 (1945).

are fixed, and demand increases are experienced, then changes in actual earnings are associated with increments in variable costs, particularly the increments in labor and raw material costs. The rate of change in output exceeds the rate of change in total costs (and this relationship can be expected commonly in the given-plant case), then the $\Delta TR > \Delta TC$ and a commission, following an "immediate" accounting pattern, has a basis for an earnings and price reduction.

At the lower prices the buyers, having presumably something more than a perfect price inelasticity of demand,²² eventually want to buy larger quantities. Then, either the company uses up more of the available reserve capacity or, lacking means of further production, it turns to expedient rationing. Later, the company may add reserve capacity in the interest of plant efficiency and service quality; if so, the $\Delta TC > \Delta TR$ and the company can petition now for a rate-level increase. In short, the immediate character of commission calculations, the failure to look beyond the actual cost-output relationship gives a fluctuating, essentially expedient, and insufficient economic pattern to earnings control.

The cost-revenue character of these commission decisions is illustrated in Figure 2. AC_b and AR_1 have the same meanings that they have in Figure 1, and AR_2 represents an experienced increase in consumer demand. MC , the short-run curve of marginal costs, is included so that increments in total revenue and total costs can be compared between the significant limits of output, Q_1 and Q_3 .²³ Starting with an initial equation

²² After the decision is made to reduce prices, the sales may not change; and the demand may seem to be perfectly inelastic within the limits of the price change. This condition which is altered as consumers eventually respond to the price change, can deceive the experience-minded regulators. Cf., "Demand Elasticity and Control of Public Utility Earnings," *American Economic Review*, June 1948, pp. 373-375.

of AC_b and AR_1 , whereby the reserve-capacity costs are charged to the existing consumers, the commission chooses a single price or a price level of P_1 .²⁴ Then the demand increases to AR_2 . At a price of P_1 the firm obtains an increment in total revenue: $\Delta TR_1 = P_1 \cdot Q_1 Q_2$. Since P_1 exceeds both the AC and MC values between Q_1 and Q_2 , the $\Delta TR_1 > \Delta TC$ and the commission orders a price reduction. Meanwhile, the firm experiences decreasing actual costs and has a smaller amount of reserve-capacity costs to "transfer" to immediate buyers. Eventually, the commission's choice of an "equilibrating" price and output are P_2 and Q_3 . And most of the reserve capacity is gone.

Suppose that, after P_1 , is chosen, the firm adds plant capacity while AR_1 remains fixed. AC_b shifts upward and to the right. With this change an increment in total cost is experienced while the total revenue, $P_2 \cdot Q_3$, is unchanged. If the commission is willing to recognize the cost change, the price shifts upward. The new AC_b is above the old AC_b , the new price is above P_2 , and the new "equilibrating" output is less than Q_3 . An illustration of price and output effects of commission control can be presented readily enough, but a change in commission practice (policy?) is something else.

When the problem concerns demand decreases, the foregoing effects of regulation relative to reserve-plant capacity are

²³ A fixed price, such as P_1 or P_2 in Figure 2, measures the increments in total revenue that occur under commission control. In terms of P_1 or P_2 of Figure 2 these increments are always above the marginal costs of output; and this may very well be the case in most earnings-control decisions where, as a common regulatory practice, the existing plant is treated as a given and non-variable fact.

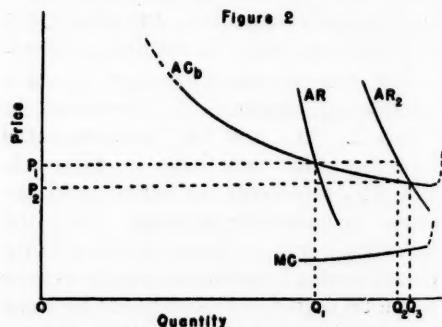
²⁴ The AC curves, turning up sharply very near the "technical" limits of capacity, are drawn here (and in Figure 1, too) as though the public utility plant has a low adaptability to variable factors. These curves, representing my impressions of short-run cost behavior in some but scarcely all utility industries, are not based on factual studies.

reversed. Taking a strict $AR = AC$ approach and recognizing that a decrease in demand at a given price level means a proportionate decrease in total revenue, the regulator orders an increase in the price level. Just as increases in demand result, perversely, in price reductions, so decreases in demand are turned into price increases. Yet such regulatory effects in a depression raise questions about deflationary consequences. In any event there are political repercussions. While consumers do not object to price reductions in prosperous times, they are bound to speak out against a commission control that allows price increases as a depression deepens. Commissions are not likely to grant many such price increases. If so, they regulate in an inconsistent manner, using the $AR = AC$ rule one way in prosperity and another way in depression. This is too much a matter of catch-as-catch-can action. Unfortunately, commission treatment of reserve capacity, following the familiar view of "each case on its own merits," has marks of expedient behavior.

In a cyclical, dynamic situation the total revenue cannot always be equal to total cost if reserve capacity is to be a meaningful and respected condition of operations. A literal interpretation of $AR = AC$, as commissions express it in terms of current costs and revenues, is not defensible unless the regulators really want to arrange price changes inversely to demand, income, and employment conditions— inversely to the general, aggregative denominators of economic welfare. Respecting reserve capacity in the prosperity phase when demand increases are most probable, the commission allows $TR > TC$ in varying amounts. And in the depression phase the $TR < TC$ in varying amounts. Reasonable-earnings control, taking account of reserve-plant capacity, is not calculated for a single

year or cyclical stage, but is measured through cyclical stages and time. The prospect is a continuing calculation of reasonable returns—a long-period and somewhat indefinite rather than an immediate perspective. This is a place for a continuous, basically experimental pattern of control rather than persisting illusions that a final and precisely fair amount of earnings always can be ascertained right now.

Much of the preceding analysis suggests clearly enough, furthermore, a relationship between investments in reserve capacity and the pattern of earnings control. Obviously the reserve capacity is not achieved unless the private firms make investments. And willingness to invest in such plant capacity is related surely to prospects of net revenue, i.e., the probable permissible prices of the regulators as well as the prospective consumer demand and cost functions. Anticipating P_1 of Figure 2 (or something near P_1) as plant capacity is planned and expecting to maintain some minimum amount of reserve capacity (perhaps the $Q_1 Q_3$ quantity of Figure 2), the company



scarcely feels rewarded when, before attention is given to probable demand decreases in a later economic stage and to a minimum reserve capacity, the price level is cut to P_2 .

Experimenting or projecting the proba-

bility of such commission behavior, a company has reason to believe that the commission is taking advantage of the immediate $AR = AC$ relation. If no attention is given to the need for $TR > TC$ in prosperity, then a relation of $TR < TC$ can be inferred as a prospective, tolerable regulatory condition in depression. The managers doubtless make allowances, too, for the strong and somewhat irrational resistance that commissions show from time to time toward price increases. In this environment a company has reason to hesitate as it contemplates reserve-capacity investments. All in all the company may conclude that, under a strictly enforced $AR = AC$ rule, the best arrangement is a scarcity of plant capacity.

Further limitations of investment may occur beyond public utility industries when a simple form of the $AR = AC$ rule is used. At times the construction of industrial plants can be affected by the availability of water, electric, and natural gas service. Lacking basic equipment or not making extensions of distribution lines, public utility industries may limit even more the investments in housing. Construction of homes, particularly in suburban areas, is quite closely associated with availability of electric and water service. Reserve capacity of public utility plants, having a direct but not commonly a great bearing on aggregate investment and employment, affords a broad range of possible efficiency calculations for commissioners.

IV

Following a customary and, in some measure, a necessary pattern of behavior, commissions scarcely ever give direct attention to useful property except as critical cases arise. They become disturbed about plant-capacity shortages after the shortages are common knowledge; penetrating study of significant shortages is not yet a distinguishing mark

of regulation. In most instances, the commissions, keeping a close focus on immediate accounting data and bound tightly to a "current-event" interpretation of the $AR = AC$ rule, handle earnings control in such a way that reserve-plant capacity implicitly has no regulatory significance at all. This is another manifestation of experience as the true guide, and neglect or abhorrence of logical construction of thought; the man of judgment and authority rather than the expert and studious man formulates the policy.

Failing to consider the meaning of useful property and passing over logical projections of their decision patterns, commissions are able to contribute directly to inefficient uses of resources. A benefit-cost relationship is basic in this allocation problem. And, in so far as private management makes the primary choices of plant capacity, the end of cost minimization probably is emphasized. While commissions, looking to social benefits of plant availability and service continuity, can perceive more efficient limits of resource use than private firms can, their behavior shows scarcely any tendencies in this direction. Indeed, they are likely to have negative effects. Neglecting cost characteristics of reserve capacity and adhering in any case, to a simple meaning of the $AR = AC$ rule, regulators can order price reductions as demand increases occur. Such a simple pattern of earnings control can discourage further investment in reserve capacity. Guided by immediate cost and revenue experiences, commission control can create shortages of output capacity, thwart even a restricted private attention to the community and consumer services that follow from plant availability and service continuity, and be responsible for some inefficiencies of resource use in public utility industries.

The Process of County Planning

A Case Study of Henry County, Indiana†

By STEPHEN C. SMITH*

THE experience of Henry County, Indiana¹ emphasizes the importance of planning as a process of public action. People have been organized around a set of public problems for the purpose of acting upon them. The citizens of the county have not made, nor asked someone else to make, A PLAN. Thought, people, and action have been arranged so that people think in acting to control the consequences. This has meant a multiple attack upon their problems by the County Planning Commission.

The intent in this paper is to point out the manner in which this planning process has been carried on. Four elements stand out: (1) The continuing pressure of certain "leading ideas" marks the direction of their activities. (2) Variance zoning has functioned as an effective operating tool of a commission having the power to act.² (3) The importance of research and of organized thinking concerning their problems has resulted in their involvement into a wide variety of programs—which means they have recognized many of their difficulties as solvable problems. (4) Throughout, the tone of democratic intent prevails. Locally the belief often finds expression that the only way plans can be enforced and carried out is for the people to be active participants in the process and to

recognize their new rights and duties. But the maintenance of flexible action frequently is perplexing as property rights are built into the plans as of any moment of acceptance. This holding of public responsiveness is one of the most difficult phases of democratic planning and only time will tell how successful they have been.³

"Leading ideas" and their effective communication into action form an important part of the planning process. Originating in a nebula of social thought, they frequently defy the attempt to locate their birth place. However, they soon find sponsorship among the leaders of the group. At this stage leading ideas begin to control action and to form the core around which developments are shaped. For them to be fully effective in a democratic society, however, an origin is required in the sentiments of the people, and the ideas benefit from the maturing process of public action and reaction. Tracing the development of these leading ideas is an effective aid to social analysis which has not been fully exploited.

Zoning by variance is somewhat unique to Henry County's planning. Land use was frozen into its existing pattern by ordinance with adjustments being compelled to come before the

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† The following sources have provided the information used in this paper: Minutes of the Henry County Planning Commission; Mr. W. G. Smith, Henry County Extension Agent and Secretary of the Planning Commission; Mr. Sam Stout, Building Commissioner; State of Indiana Economic Council (map of Indiana showing counties with ordinances); *A Manual of Planning Legislation and Procedures in Indiana*, by Mrs. Teresa Zimmerly, *Community Planning Legislation*,

Bulletin No. 8: Attorney General's Office, State of Indiana. The author wishes to acknowledge his thanks to all those with whom this material was discussed.

¹ Henry County is located in east-central Indiana. New Castle, its county seat, has an estimated population of 20,000.

² Variance zoning consists in the granting of a variance right so that an action may take place in variation to the zoning ordinance.

³ Local opinion still feels the matter of public participation is their weakest link.

commission to obtain a variance permit to the original ordinance. As a method of operation until a master plan and permanent ordinance could be worked out, to give the leaders experience in land use control, to confront the citizens of the county more sharply with their problems so that they could become a creative part of the process, variance zoning has functioned with considerable success.

In addition, the broad view which the County Planning Commission encompasses makes possible the dealing with a composite of interrelated problems denied to merely a zoning function. Thus the approach becomes positive, not negative. A developmental program expanding the opportunities of the people through democratic control becomes feasible.

Henry County's leading ideas were maturing before the birth of the Commission. They found partial expression in several years' experience with the County Land Use Planning work. However, the benefits which could be derived from a positive action program became increasingly evident. Concern for water conservation was a major factor demanding attention. The county's water table had been dropping at a rate which attracted notice. Further, the county's location made it an ideal place to practice head-water flood control because of the origins of Blue River and White River. Also, major tributary creeks to these and other rivers start in the county. Another aspect of the water problem was the ill-engineered drainage pattern. This phase of the water situation originated from the ditching completed at the turn of the century, and stream pollution from industrial plants provided a third part of this difficulty. Thus, a local organization with official status was desired which could start action.

The increased urbanization of the county called for control which the

cities could not provide. Availability of industrial employment in the county seat, New Castle, as well as in many other cities within a radius of sixty miles, had resulted in an expansion of rural nonfarm residents and city growth. Problems of planning for the county's orderly development so that the changes in rural land use would cause the least community maladjustments were imminent. There was the desire to move systematically from farming to non-agricultural uses via the less productive farm lands. Adding to these tensions the city of New Castle established a Plan Commission with the possibility of causing a disorganized condition between the planned city and the unplanned county. Thus the county leaders worried about the city throwing the whole low-cost housing burden upon the county by having a better political bargaining forum and by having an effectively organized policy in the city.

The Land Use Planning Committee did not have the ability to meet these problems in the first instance. Besides, its planning work had come under heavy fire and had been abandoned at the federal and state levels. This situation required alternative modes of action.

On December 29, 1943, the Henry County Land Use Planning Committee called a meeting to discuss drainage laws, to talk over postwar plans for Henry County agriculture, to consider the appointment of a county planning commission under the 1935 Acts, and to contemplate the establishment of a county conservation district. Positive recommendations were passed in relation to drainage and postwar planning but in a sense they depended upon the Planning Commission to aid in their execution. A sub-committee was appointed to investigate the organization of a county planning commission.

This study continued until March 31, 1944, with the submission of a favorable recommendation. The subcommittee surveyed the enabling legislation and obtained the cooperation of the New Castle Planning Commission and the County Farm Bureau in attempting to see the best course of action. The Farm Bureau sponsored a meeting to discuss county planning and to find a wider expression of opinion and support. Attendants at this meeting, March 9, 1944, included a broad cross section of county leadership.⁴ A motion passed to "express favorable interest in the appointment of a commission and to direct the committees to make further studies."

On March 31st the township representatives of the Henry County Land Use Planning Committee received the favorable report of the subcommittee. The Committee recommended to the county commissioners the appointment of a county planning commission.

The legislation under which the proposed commission was to be organized passed the Indiana Legislature in the Acts of 1935, Chapter 239, page 1239. Provision is made for the County Commissioners to appoint at least six members to a Planning Commission.⁵ Accordingly, it will be the "duty of the County Planning Commission to make and adopt a master plan for the physical and economic development of the County," in accordance with the general welfare criteria. The Commission shall have the power to make studies and recommendations and to cooperate with other agencies to afford "abundant opportunities for the proper utilization of natural resources and the talents and

ability of all individuals in a manner profitable to each; and in order that the people of the county and the State of Indiana may realize the greatest possible benefit from the natural, agricultural, industrial, and other resources of the county and state, including minerals, soils, lands, forests, . . . mechanical industry, wholesale and retail trade, . . . as will tend to reduce the wastes of physical, financial, or human resources."

To give the Commission power it may submit an ordinance to the county commissioners "for the purpose of carrying out the master plan or any part thereof, including zoning and land use regulations, the making of official maps . . . and regulations for the conservation of the natural resources of the county, . . . and including procedure for appeals from decisions made under the authority of such ordinances and regulations."

To this plan and ordinance county officials are held accountable unless public exceptions are filed. Under these provisions wide latitude is available and has been upheld by the Indiana Supreme Court in *Board of County Commissioners v. Sanders* (1940), 218 Indiana 43 or 172 NE 312.

By appointment of the county Commissioners the first meeting of the Henry County Planning Commission was April 28, 1944. Since the authority under the statutes was broad, the commission proceeded with the understanding that, if their work was to succeed, they would have to learn slowly their new role of being an authoritative planning agency. In a sense, five years later the process of learning was still going on, for no master plan or permanent ordinance has been

⁴ Represented at this meeting: Henry County Land Use Planning Committee, township trustees, township Farm Bureau chairman, the County Commissioners, the County Council, the County Attorney, the County Surveyor, the Mayor of the City of New Castle, the City Engineer of New Castle, the chairman of the New Castle Chamber of Commerce, the Chairman of the New Castle Planning Commis-

sion, the County Superintendent of Schools, and the County Agricultural Extension Agent. Thirty-seven people attended the meeting.

⁵ Membership: one from the County Commissioners, the County Surveyor, four other members, and the County Agricultural Extension Agent and one from the city or town Planning Commission, if any.

enacted. However, the commission has been very active as the subsequent discussion will indicate.

In the transition from land use planning to county planning, the former furnished a basis for the latter. The ideas of the county's problems were being formulated during the earlier period. Many of the same men were involved in both so that a group of county leaders had their problems well in mind and were accustomed to thinking in county-wide terms. Thus, the leadership of the county took the new step receptively.

From the time of establishment, April 28, 1944, to June 1, 1945, discussion proceeded concerning the duties and responsibilities of the Commission. Meetings with members of the staff of the State of Indiana Economic Council, with people from other counties operating under the same law, with officials from the city of New Castle, and other persons who could contribute to their understanding, provided the basis for working upon Ordinance No. 1. In addition, the members of the Commission read widely in the field of zoning and planning. The drafting proceeded with a back-and-forth flow of ideas between members of the Commission and the County Attorney.

The feeling was paramount that a hurried master plan and ordinance should not be drawn, for "the controls are enforced by the people" and they must be aware of their actions.⁶ Therefore, the desire was to "freeze" the present pattern of land use. Consequently changes in land use would be forced to come before the Commission for decision. The result of this process was to aid the people in knowing the

potentialities of their new rights and duties. The ordinance is "for the purpose of promoting . . . general welfare . . . by prohibiting the erection, construction, alteration or use of buildings or structures, the use of land for any commercial business or industrial purpose in residence and farming districts, and for specified industrial purposes at any location unless approved by the County Planning Commission." To spell out this freezing, the ordinance states that in the residence district "no building shall be erected, altered, . . . or land be used . . . unless otherwise authorized by the Henry County Planning Commission, except for one or more of the following specific purposes: (1) Dwellings for one family; . . . (7) Commercial, industrial or business enterprises subject to the approval of the Henry County Planning Commission." Building restrictions as lot sizes, set back lines, and other such requirements apply.

In order to control the spreading urbanization and to protect the general welfare "in the agriculture, livestock and poultry farming district, no building or premises shall be used . . . except for . . . (1) Farming or truck gardening . . . (2) Animal farms . . . (3) Poultry farms . . . (5) Home Occupations . . . (6) Single family dwellings; but where such dwellings would have a value less than \$1,500.00, on completion thereof, (exclusive of value of land and accessory buildings), or *where buildings other than single family farm dwellings are desired to be constructed, erected or used in this district for the purpose of human habitation or any accessory buildings thereto, a permit shall be required, but shall not be issued until the issuance thereof has been first approved by the Henry County Planning Commission. [Italics added]* . . . "No land use other than for agriculture, home, or non-commercial occupation purpose, shall be permitted in this district

⁶This view was expressed by various members of the Commission.

without the approval of the Henry County Planning Commission."

Enforcement is through the issuance of building permits and use permits. However, "in the cases of unnecessary hardship, [the Commission may] make exemptions from the application of this Ordinance in harmony with the general purpose and intent of this Ordinance and in accordance with the following rules:

"No variation in the application of the provisions of this Ordinance shall be made concerning the use of land, . . . unless after public hearing the County Planning Commission shall find that such variation will not:
(1) Impair an adequate supply of light and air to adjacent properties;
(2) Increase the hazard from fire . . .
(3) Diminish the value of land . . .
(4) Increase the congestion or traffic hazards . . .
(5) Otherwise impair the public health, safety, comfort, morals, and general welfare of the inhabitants of Henry County, Indiana."

This brief summary of the ordinance indicates the broad power of freezing land use and then providing the means for rationing out property rights to conform with a public idea through the power to issue variances. Interim operation has proceeded upon this basis.

Public hearings and newspaper publicity preceded the passage of the ordinance by the county commissioners. A large proportion of the county leaders were aware of the new ordinance, but general public knowledge was lacking. However, as the first month of operation brought cases before the Commission, the process of public recognition and reaction began. The first case, July 6, 1945, concerned the performance of a medicine show in a residential area. The householders were sustained with the suggestion that the show operate by variance in the Old County Fairground, it being somewhat more isolated, until permanent space for such land use could

be provided. The pattern of forcing Commission decision and action was thus begun, for each subsequent show would have to get a new permit. The orderly provision of alternatives for action became part of their policy, rather than the setting down of blanket prohibition. The citizens were learning their rights in the Commission and, by being forced to decide the problems as they arose, the Commission was developing democratic control.

Another case illustrates these two phases of the Commission's experience. Two men wanted to open a horse slaughter house in the country. Following the usual Commission procedure, letters were mailed to all neighboring property owners of the space in question. No objection was raised. Since all other requirements of the Commission had been met, the operators were allowed to proceed on a contingent basis. However, within three to four months after operations began, complaints poured into the Commission. Again the people were becoming aware of their potential rights in the planning organization.

Formal action before the Commission stated, among other things, that malodors emanated from the premises, that the animals were not properly cared for, that blood and other liquid waste stood in large pools about the building and drained into an open ditch, that solid waste was collected in large open barrels for weekly disposal, that no screens covered the doors or windows, and that the infestation of flies was extreme. Subsequent to these allegations an investigation was held. In this it is important to note that the Commission was learning to control. They requested the State Board of Health to make the inquiry and to submit recommendations for the operation of the business so that it would not be a public health hazard.

Following these recommendations the firm made half-hearted attempts to comply with the State Board of Health standards. After approximately a year and a half, the business ceased operation. From this experience the important precedent for using technical help outside the Commission membership commenced. The policy was established that no permit be issued which involved a question of public health without first obtaining the recommendation of the State Board of Health.

Cooperation with other agencies also prevailed in many fields. For instance, no major land use change would be allowed within a two-mile radius of New Castle without the approval of their Commission and engineer as a condition of county acceptance.

As control and public awareness are phases of the same thing, procedures were started to give notice of the ordinance and its operation to strategic individuals. Consequently, copies were mailed to the following groups in the county: lawyers, lumber dealers, realtors, judge, banks, building and loan associations, and the county offices. In addition, when variance cases come before the Commission, all the property owners neighboring the questioned area, receive written notice. For re-zoning an area, newspaper publicity becomes an added part of the procedure. As 116 cases involving most of the county have been acted upon by the Commission, the problems thus have been defined and, in the process, public responsibility has been increasing.⁷

Operating a zoning ordinance is but part of the task of land use planning. Yet to do it effectively a whole complex of intertwined social problems must be met and studied. In its origin, the Commission had the wider view. Thus, the

question of the county's water supply was undertaken. Embarking upon this served the complementary functions of further publicizing the activities of the Planning Commission and obtaining data relevant to the activities of planning (roads, forests, land use practices, general water conservation, dam site locations and other public concerns) by bringing together technical agencies to furnish specialized aid.

Following considerable educational activity in the public schools and in the county newspapers about water conservation, the Commission held a meeting of "strategic" officials with the aid of the local Farm Bureau. The basis for determining the "strategic" classification was that each individual should represent an action agency, public or private. The out-of-county guests included members of the Division of Water Resources, the Indiana Department of Conservation; State and District representatives from the Soil Conservation Service of the U.S.D.A., the Indiana Soils Survey, the State Highway Commission, Indiana Flood Control and Water Resources Commission, the United States Army Engineers Corps; and members of the Department of Engineering, Purdue University. Members of the County Planning Commission first aired Henry County's problems; then each of the afore-listed agencies stated its functions and what it could contribute in the way of technical aid to the county. Commitments following the meeting resulted in a survey of the county's forest land, a road survey, a reconnaissance soils survey, and a report on the water problem.

These illustrate only a portion of the research programs in which the Commission played a role, in both initiating the projects and benefiting from the results. The Bureau of Agricultural Economics of the U.S.D.A., in coopera-

⁷ Three hundred sixty-eight building and use permits have been granted.

tion with Purdue's University Department of Agricultural Economics, conducted a rural organization study in the county. Although not directed toward the solution of their immediate problems, much of the data could serve a double function and be used by the Commission and the technical researchers. In addition, the Inter-governmental Relations Council, operating under a grant from the Spillman Foundation, made several studies of their government and provided much useful material.

In addition to using these outside agencies to supply required information, members of the commission continue detailed studies of the county. A special county-city committee studied the fringe area of New Castle, and another committee worked on the location of areas for waste disposal. Although all these investigations have been helpful, the research problem has been one of their most difficult. It may be improved when the stage of hiring a full-time office staff has been reached.

The listing of these research activities shows the complexity of the problems and the amount of information required to make adequate judgments for public action. The Commission has had the power to act and to initiate a program. Many people have worked on these county problems, thereby giving these difficulties meaning to the citizens.

Three other positive activities of the Commission include: (1) The establishment of the first of several county-city dumps to serve both rural and urban people. (2) Cooperation with the city of New Castle which has resulted in several joint meetings of the planning commissions of both governmental units. A member of each sits regularly with the other commission. (3) Township committees which have been organized in the thirteen townships. The purpose of

these committees is to survey the problems of the township and report back to the Commission. In the case of the one in the township which contains New Castle, considerable effort has gone into their fringe report. The other township committees have not been as active. However, to a considerable degree the success of the whole program may hinge upon the way in which these committee-men serve as local leaders. Part of their activity will be to play a prominent role in the completion of the permanent ordinance and master plan. Further, the idea is being passed around that it might be wise to have them partially responsible for ordinance enforcement. In any event, they are potentially a very important link in maintaining a responsive public planning process.

To date, the Planning Commission has been acting in the dual legislative and judicial capacity. This practice has wide precedent but authoritative opinion frowns upon the procedure. Although they know of the possible short-comings of the practice of being both the Planning Commission and the Board of Appeals, it was the feeling that as a planning body they should thoroughly understand the problems as they arose. Since these difficulties would come to the attention of the Board of Appeals, they decided that for the interim period it would be better to act in both capacities. The desired consequences have come from following this procedure, plus the starting of many valuable precedents for future action.

Passing a permanent ordinance and a master plan are large issues in the immediate future of the Commission. This new ordinance will operate under the new Enabling Act of 1947. The 1947 Act is longer than the one of 1935 and it sets out the procedures of operation more clearly in the hope that there will be less

floundering by new commissions. The powers conferred under this law are fairly broad. The master plan which shall be made may include, among many other things, "factors which are a part of the physical, economic, or social situation within the county." Under the zoning authority the following appears:

. . . general public welfare may be promoted; and that the object of this legislation, as set out in Section I of this act, may be further accomplished, . . . the board of county commissioners shall have the following powers: . . .

- (3) To regulate and determine the use and intensity of use of land and lot areas.
- (4) To classify, regulate and restrict the location of trades, callings, industries, commercial enterprises and the location of buildings designed for specified uses.
- (5) To classify and designate the rural lands amongst agricultural, industrial, commercial, residential, and other uses and purposes.
- (6) To divide the city or county into districts of such kind, character, number, shape and area as may be deemed necessary to carry out the purposes of this section."

The procedural aspects of the new act should serve the intended guiding function. But the interpretation which will be given to the first sentence of the law in the Statements of Intent, Section 1, may limit its scope for adequate land use planning: "That each city council, and town board of trustees and each board of county commissioners in the State may by ordinance create a plan commission *in order to promote the orderly development of its governmental units and its environs.*" (Italics added) May the Planning Commission do anything which does not come within the scope of this sentence? Under the authority to zone, the meaning appears clearer and has official interpretation. Yet one wonders how far a county could go, if the people were willing, with the power "to regulate and determine the use and intensity of use of land and lot areas."

In any event, new ordinances are being drafted in accordance with the 1947 Enabling Act.⁸ At the present stage of development Henry County's new ordinance draft more clearly defines the use districts as a means for providing more adequate control. With this, a dependence upon variance zoning will be diminished. The pattern which they plan to follow in adopting the new ordinance and maps calls for public hearings in each township with the township committees playing a key role.

The members of the Commission see many problems to work upon. These include further school consolidation and better school location, road planning, designing a better county drainage system, providing improved outdoor recreational areas within the county, completion of the waste disposal project, location of flood control and reservoir structures, a program to stop stream pollution, the establishment of county forest areas, plus the development of present activities. Such programs in combination with zoning make for more complete land use development rather than just land use restriction. Zoning is so intimately connected with these other activities that concentration upon it would be one-sided and possibly ineffective.

In sum, (1) the leading ideas which carried over from the old county-land-use-planning days have come to function in a County Planning Commission which has the power to act and which has acted. These ideas have been carried forward by a group of county leaders who have an understanding that leading ideas work to control only to the extent that they are widely diffused and ac-

⁸ As of July 1, 1949, seventeen counties have planning commissions in various stages of activity. Residents in counties quite similar to Henry County state they have no problems for a Commission to work upon. Such statements illustrate what Henry County's leading ideas have done for it.

cepted. (2) Variance zoning served a valuable function in the process of learning to control. It is surrounded by dangers of arbitrariness, but to the extent that the leading ideas are predominant, these pitfalls are greatly lessened.

(3) The leading ideas were alive to the problems facing the people. Narrow concepts of restrictive zoning were bypassed for expansive concepts of enlarging the general welfare by planning solutions to some of their difficulties.

The Corvallis Land Classification Conference

By DAVID WEEKS,* KARL S. LANDSTROM,† and C. V. PLATH‡

AT the Gearhart, Oregon meeting of the Western Farm Economics Association in 1946, three papers were presented descriptive of or having an important bearing upon the economic classification of rural agricultural land in the state of Washington.¹ The implications were that the techniques used in Washington might have wide application in the western states for many purposes. The time available at the Gearhart meeting for the discussion of these papers was too short for exploring the general applicability of the Washington techniques. An invitation by Oregon State College made possible a resumption of these discussions at Corvallis, Oregon, on November 29 and 30, 1948. Representatives from four western states and Canada, 24 in all, were present. At the close of the conference, a committee was appointed to summarize the results of the discussions. This paper is the report of that committee.² It represents a summary of many points of view, some of which differed sharply and were not necessarily resolved at the conference. The sessions were conducted as open forums with no formal papers presented.

The scope of the Corvallis conference was limited, generally, to the classifica-

tion of rural agricultural land according to economic characteristics. The discussion touched upon definitions, importance, techniques, and appraisal of techniques of economic land classification. More specifically, those present wanted to know if there was an important need for the type of land classification typified by that used in the state of Washington. Furthermore, they wanted to know if the procedures of that program were adequate for general application. It was important, therefore, to view the Washington objectives, criteria, and procedures against the background of changing attitudes toward, and experiences in, economic land classification. The conference was a recognition by western professional groups of the necessity for reorienting their activities.

Development of procedures, techniques and criteria in land utilization research in which economic land classification has played a predominant role has been reviewed and summarized by various writers.³ The most comprehensive summary of objectives, uses, and techniques of land classification (including economic land classification) as it had developed through the 1930's is the one compiled and published in 1941 by the Land Co-n-

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¹ B. D. Parrish, "Definitions of Land Classes and Methods Used in Mapping," *Proceedings of the Western Farm Economics Association*, June 26-27-28, 1946, pp. 43-46; Arthur W. Peterson, "Statistical Description and Analysis of Data by Economic Land Use Class Areas," *Proceedings of the Western Farm Economics Association*, June 26-27-28, 1946, pp. 47-60; and Orlo H. Maughan, "Credit Experience and Land Class," *Proceedings of the Western Farm Economics Association*, June 26-27-28, 1946, pp. 61-68.

² The Committee acknowledges the contributions of the members of the entire conference. The opinions expressed

by the members largely represented personal views, not necessarily the official views of their respective employers.

³ Advisory Committee on Social and Economic Research in Agriculture, J. D. Black, ed., *Research in Agricultural Land Utilization—Scope and Method in Social Science Research Council*. Bul. No. 2, New York, June, 1931; Leonard A. Salter, Jr., *A Critical Review of Research in Land Economics* (Minneapolis: The University of Minnesota Press, 1948), pp. 139-145; M. M. Kelso, *Major Trends in Land Utilization Research in the United States* (U. S. Department of Agriculture Address, Annual Meeting of the New England Research Council on Marketing and Food Supply, Boston, Mass., April 23, 1941); and University of Missouri, College of Agriculture, *The Classification of Land; Proceedings of the First National Conference on Land Classification*. Mo. Agr. Exp. Sta. Bul. 421, Columbia, 1940, 334 p.

mittee of the National Resources Planning Board.⁴ After examining 75 representative investigations in which land classification techniques had been used, the Land Committee found that land had been classified on the basis of five groups of attributes; namely, in terms of (1) inherent land characteristics, (2) present use, (3) use capability, (4) recommended use, and (5) program effectuation. Use-capability classifications, having either an explicit or implied economic orientation, was of most immediate concern to the Corvallis conference. It is significant that of the 75 state and federal projects listed by the Land Committee, 53 were considered to include characteristics of classifications of land based on its use capability. Use-capability classifications vary widely in the purposes which they are designed to serve, in their general character, in the methods by which they are made, and in the intensity of work required to complete them.

General Purpose Use-Capability Classifications

Opinions differ concerning the importance and usefulness of the general purpose classification of land use capabilities. General purpose classification, according to the views of some, may serve a broad objective such as providing one of the means for the solution of a group of interrelated problems as in land use planning. Or such classification may be intended to serve any one of a number of purposes such as providing a basis for land appraisal; determination of credit risks; tax assessment; local government reorganization; location of schools, roads, public utilities, and other public works; or

⁴ National Resources Planning Board, *Land Classification in the United States* (Washington, D. C., 1941); and W. F. Musbach and V. Webster Johnson, "National Resources Planning on Land Classification," *Journal of Land & Public Utility Economics*, November 1941.

⁵ Illustrations of this type of classification may be found in the following references: Soil Survey of the Bureau of Plant Industry and State Agricultural Experiment Stations, in

guidance of land settlements. One of the most recent uses of such land classification is to delineate areas for the stratification of economic research data; these areas then form the limits within which the results can be generalized.

Soil Productivity Ratings. Productivity ratings of soil types and the grading of soils with respect to their suitability for agriculture may serve many purposes and therefore are general purpose classifications. Although usually constructed by soils scientists, such ratings may have an economic orientation. Admittedly limited in their consideration of economic factors, there is some weight given to management practices and other human elements in determining agricultural adaptability.⁵

Professional Economic Classification. During the two decades 1920-1940 many classification projects were carried out in which physical inventories and classifications were supplemented by professional analyses of the complex interrelated physical and economic characteristics of land in order to place lands of different use capabilities into appropriate categories. Most of these classifications pertained to major uses and were carried out with the view of solving various land use problems. These land classification projects were carried on by the various state experiment stations, by the United States Bureau of Agricultural Economics and by representatives of state and federal agencies in cooperation. In 1934, under the Submarginal Land Program, much of the same personnel which was engaged in the various independent projects of the

Land Classification in the United States, op. cit., Chap. 10, pp. 58-64; R. Earl Storie, *An Index for Rating the Agricultural Value of Soils*, Calif. Agr. Exp. Sta. Bul. 556, Berkeley, 1935 and 1937; W. W. Weir and R. E. Storie, *A Rating of California Soils*, Calif. Agr. Exp. Sta. Bul. 599, Berkeley, 1936; C. P. Barnes, "Interpretive Soil Classification," *Soil Science*, February 1949, pp. 127-129; and C. P. Barnes and W. G. Harper, "Interpretive Soil Classification: Agricultural Use and Management," *Soil Science*, February 1949, pp. 141-149.

earlier activity was mobilized in a nationally coordinated program later to be broken down into various responsibilities, one of which was the Land Utilization Program of the United States Bureau of Agricultural Economics. Although these programs were generally broader than use-capability classifications, the latter frequently became a major phase of the basic procedure.⁶

"Grass Roots" Land Classification. A tendency toward citizen participation in land classification was recognized in the United States at least as early as 1928 and even earlier in Germany where since 1926 (at least) land classification has made use of "honorary appraisers" from the local community in all land classification. It is now (since 1936) written into the German Land Appraisal (classification) Law. Two local farmers must be utilized by the government soil classifiers in each township. Possible reasons for the tendency toward this "democratic" procedure in the United States may be enumerated as follows:

- (1) The land use zoning movement legally required citizen participation in the delineation of land use zones.
- (2) The fear of dictatorship by a centralized government probably promoted local interest in land use planning.

⁶ Examples of this type of classification may be found in the following references: B. H. Hibbard, John Swenehart, W. A. Hartman and B. W. Allin, *Tax Delinquency in Northern Wisconsin*, Wisc. Agr. Exp. Sta. Bul. 399, 1928; B. H. Hibbard, W. A. Hartman, and W. N. Sparhawk, *Use and Taxation of Land in Lincoln County, Wisconsin*, Wisc. Agr. Exp. Sta. Bul. 406, 1929; Millard Peck, B. Frank, and P. A. Eke, *Economic Utilization of Marginal Land in Nicholas and Webster Counties, West Virginia*. U. S. Dept. of Agr. Tech. Bul. 303, Washington, D. C., 1932; C. F. Clayton and W. D. Nicholls, *Land Utilization in Laurel County, Kentucky*. U. S. Dept. of Agr. Tech. Bul. 289, 1932 (See also Clayton's method in Project 26, Social Science Research Council Bul. 2, *op. cit.*), David Weeks, A. E. Wieslander and C. L. Hill, *The Utilization of Eldorado County Land*. Calif. Agr. Exp. Sta. Bul. 472, Berkeley, 1934; Submarginal Land Program, *Circular of Instructions-No. 1*. Unpublished, Washington, D. C., June 7, 1934, processed; A. B. Lewis, *Methods Used in an Economic Study of Tompkins County, New York, etc.* Cornell Univ. Agr. Exp. Sta. Memoir 160, New York, 1934; A. B. Lewis, *Relation of Income to Capital on Farms. Newfane-Olcott area. Niagara County, New York*. U. S. Dept. of Agr., Farm Credit

- (3) The basic concepts of land use control, land use planning, land utilization research and land classification had been confused one with another.
- (4) The extension of public control to the entire field of agricultural adjustment merged the local interests of specialists in the fields of land economics, farm management and agricultural prices.⁷

The beginnings of the "grass roots" or "democratic" approach to land classification in the United States may be traced to the influence of B. H. Hibbard, George Wehrwein and others in Marinette County, Wisconsin,⁸ and to H. C. Taylor's leadership in coordinating the thinking of "Two Hundred Vermonters" in the development of a program for Rural Vermont.⁹ Both of these efforts were broader in their scope than a land classification, but each laid a foundation for the "grass roots" type of land classification, which, after a period of trial in the Tennessee Valley,¹⁰ found its expression later in the State and County Land Use Planning Program of the United States Department of Agriculture.¹¹ The importance of these earlier applications of the "democratic" or "grass roots" procedure is in the completeness of the background evidence and analysis which supported the decisions made by the laymen who assumed responsibility for

Administration, Washington, D. C., 1941; H. E. Selby and Leland Fryer, *Willamette Valley Land Adaptability*. Oregon Agr. Exp. Sta. Cir. 120, 1937; and A. Stewart and W. D. Porter, *Land Use Classification in the Special Areas of Alberta*. Dominion of Canada, Dept. of Agr., Pub. No. 731, Tech. Bul. No. 39, 1942. (See also Pub. 728, Tech. Bul. No. 36.)
⁷ Bushrod W. Allin, "A Review of Salter's *Land Economics*," *Agricultural Economics Research*, July 1949, pp. 98-99.

⁸ Wisconsin, University, College of Agriculture, Extension Service, *Making the Most of Marinette County Land*. Madison, 1922, 23p.

⁹ *Rural Vermont; A Program for the Future*, by Two Hundred Vermonters, Burlington, The Vermont Commission on Country Life, 1931. 385p.

¹⁰ Philip Selznick, *T.V.A. and the Grass Roots* (Berkeley and Los Angeles: University of California Press, 1949).

¹¹ The background of the County Land Use Planning Program may be found in a series of six documents issued by the U. S. Dept. of Agr. in 1938. (Processed) The names of these documents are given in a mimeographed statement "Summary of Documents Dealing with Agricultural Planning."

the programs evolved.¹² The first economic land classification work carried on in the Sierra Nevada foothills of California was a detailed analysis of physical and economic data, pertaining to agriculture, grazing and forestry, supplemented by the valuable collaboration of a county land use committee.¹³ These studies were patterned to a great extent after these earlier experiences in Wisconsin, Vermont and other states but with a new emphasis on criteria and classification procedure. Such thorough analysis of land utilization as a background for the democratic process of "grass roots" land classification was not characteristic of the later classifications made in the State and County Land Use Planning Program. The California detailed studies were designed to develop principles and measures which could be used in more rapid and less costly procedures if and when more extensive areas were to be classified.

Special Purpose Use-Capability Classifications

In addition to the general purpose type of economic land classification there have been a number of classifications made for special purposes. There are some who believe that each separate and distinct land use problem should have a classification designed or at least modified for its own solution, having a unique set of objectives, definitions and methods.

Like the productivity ratings of the soils scientists, special purpose classifications as made in the past frequently have

¹² For example, the Rural Vermont program was able to base its decisions with respect to land utilization upon a coordinated detailed study by C. F. Clayton and L. J. Peet, *Land Utilization as a Basis of Rural Economic Organization*. Vermont Agr. Exp. Sta. Bul. 357, 1933.

¹³ The Mountain Democrat, "Land Use Planning Board Guides Growth in County," Placerville, California, Dec. 29, 1933. The literature on this series of studies is cited in: David Weeks, "Objectives of Area Analysis in the Northern Sierra Nevada," *Journal of Land & Public Utility Economics*, May 1943, pp. 153-164.

¹⁴ U. S. Forest Service, *Instructions for Range Resource Inventories on National Forests*, May 10, 1948. (Processed)

been based on physical more than non-physical considerations. Their orientation toward economic and social objectives, however, and a general tendency to consider nonphysical factors, perhaps not deliberately, justify mention of some of them here.

Range Surveys of the Forest Service, Soil Conservation Service, Bureau of Land Management, and Other Agencies. These surveys at times have included classification of range lands as to grazing capacity, forage value of plant species, and adapted range management practices.¹⁴

Land Classification for Water Resource Development. Project planning, including determination of irrigability and use capability of land, feasibility, and economic justification of projects, and numerous other critical determinations, has required a highly specialized type of land classification.

The Water Facilities Area Planning Project of the Bureau of Agricultural Economics included classification of land according to grazing capacity, recommended land use but, more particularly, suitability of land for development of water resources.¹⁵

The United States Bureau of Reclamation¹⁶ carries on three intensities or scales of operation in its land classification work. (1) Reconnaissance; (2) Semidetailed; and (3) Detailed. In each, the criteria of classification are the same and include both physical and economic features.

¹⁵ U. S. Bureau of Agricultural Economics, *Water Facilities Area Plan for Goose Lake Area, Oregon*. Washington, D. C., December 1939. (Processed)

¹⁶ U. S. Department of the Interior, Bureau of Reclamation, *Land Classification Handbook*, Manual Vol. V. Washington, D. C., Aug. 30, 1946 (Processed); U. S. National Resources Planning Board, *Land Classification in the United States*, Chap. XII, "Land Classification in the Bureau of Reclamation," Washington, Govt. Print. Off., 1941, pp. 71-79; and University of Missouri, College of Agriculture, *The Classification of Land; Proceedings of the First National Conference on Land Classification* (Land Classification to Determine the Feasibility of Reclamation Projects by John C. Page) Mo. Agr. Exp. Sta. Bul. 421, Columbia, 1940, pp. 247-260.

Unique methods characterize the field procedure in obtaining data. These methods are described in detail in cited publications. "Arability classes" are determined on the basis of physical data and estimates of costs of irrigation. "Irrigability classes" are determined on the basis of "repayment experience" and other economic data (farm management studies, Census, etc.) used in conjunction with "arability classes." Final adjustment of classification is made where special conditions pertaining to a given project indicate the necessity of modifying the original class determination.

Net Income Area Maps. Net income-producing power of specified areas may be the primary objective in land classification and may be the single economic fact shown on the resulting maps.

The mapping project carried on by the Federal Land Bank of Spokane¹⁷ is in accordance with definitions of classes adopted nationally by the Farm Credit Administration. The definitions give a description of the net income areas rather than state the categorical limits of each area in terms of the criteria used in mapping.

The most common procedure is for the local appraiser, utilizing his knowledge of the area gained through experience appraising individual farms, to draw up a first draft of a map. Then the reviewing appraiser or director of research or both reviews the map in the field and, in con-

sultation with the local appraiser, makes any necessary adjustments for the final delineation of areas. The secretary-treasurer of the National Farm Loan Association serving the area often participates in the mapping. All known factors which influence income both farm and nonfarm are considered in the mapping work. Appraisers make widespread use of other land classifications, particularly soil surveys, as a means of increasing their knowledge of their areas, but these other maps do not lend themselves so well for classifying loans and analyzing loan experience as the net income area maps which were designed for those purposes. The maps are not based on loan repayment experience. This factor is analyzed independently after the maps have been made. A remarkably close correlation between the net income classes and loan experience has been found.

The Land Bank in its lending activities can give little attention to classifications that map "potentially" better areas if these potentials can be realized only at some future date and with some expenditures for capital improvements. It must be guided by the income-producing capacity at the time the loan is closed.

The appraiser also classifies each farm which he appraises. Not all good farms are located in good areas, nor all poor farms in poor areas. Both the farm and the area in which it is located are important to the Land Bank in its operations.

The land use classification work done in several areas of the prairie provinces of Canada¹⁸ shows some similarity to the net income area mapping being done by the Spokane Bank.

Use-Capability Classification for Soil Conservation. The land use-capability classi-

¹⁷ Based upon information presented by R. M. Sauer and Alexander Joss, Federal Land Bank of Spokane. See also paper presented by O. H. Maughan at the Gearhart meeting in 1946, *op. cit.* Except where off-farm income becomes an important factor, the net income area maps of the Farm Credit Administration in the state of Washington and the Economic Land Use Class Maps as prepared by Washington State College have been almost identical. In fact, the Economic Land Use Class Maps of the State of Washington have been prepared in cooperation with the Research and Appraisal Division of the Farm Credit Administration at Spokane. Definitions and standards for each land class approximately coincide in full-time farming areas. Only in those areas where off-farm income adds materially to the family income out of which loans can be paid do the maps differ.

¹⁸ A. Stewart and W. D. Porter, *Land Use Classification in the Special Areas of Alberta*. Pub. No. 731, Tech Bul. No. 39, Dominion of Canada, Department of Agriculture, 1942.

fication of the United States Soil Conservation Service has been defined as "a systematic arrangement of different kinds of land according to those *natural characteristics* that affect suitability for and permanence under cropping, grazing, forestry, and other agricultural uses."¹⁹ The classification is looked upon by the Soil Conservation Service as primarily a physical classification. As such it would be excluded from consideration here were it not true that (1) the land use capabilities which are mapped refer to potential uses at highest economic returns under an assumed permanent system of management;²⁰ and (2) the land use capabilities in practice are used directly as indicators of adapted land use. Both of these facts suggest that the land use-capability classification of the Soil Conservation Service implies an economic as well as a physical classification. Referring to conservation practices "needed to cope with hazards in using the land after it has been conditioned or fitted for use," Wohletz states: "The practicability and feasibility of these practices must be considered in light of the broad economic aspects of the nation. Territorial land economy rather than the individual farm economy must be the guide."²¹ It may be concluded, therefore, that this classification, from an economic standpoint, is valid as an indicator of use capability insofar as it is probable that the assumed permanent system of management will be achieved on the land being classified. With other systems of management assumed, and

more complete consideration of economic factors in making the classification, the land might be shown to have other use capabilities. In view of this possibility, the Soil Conservation Service classification supplemented by economic interpretation might be used for general purposes such as land appraisal, tax assessment, credit analysis, or general land use planning.

It is clear, however, from the foregoing discussion of the special purpose classification that no single all-purpose classification is as useful for the solution of a particular problem as one designed exclusively for that purpose. The necessity for economy, however, may justify the use of general purpose classifications for various specific purposes.

Economic Land Classification in Washington State²²

Although the Washington State land classification work is of the general purpose type, for reasons given at the beginning of this paper, discussion of it has been reserved for special and more detailed consideration here.

In 1945 the Agricultural Experiment Stations and the Cooperative Agricultural Extension Service of the State College of Washington published a series of eight leaflets featuring maps showing "economic land use classes" within the present and potential agricultural areas of eleven counties of western Washington.²³ The textual materials published

¹⁹ L. R. Wohletz, *The Land-Capability Concept*. U. S. Dept. of Agr., Soil Conservation Service, May 1949 (Processed); Roy D. Hockensmith, *The Use of Land-Capability Maps for Rural Real Estate Assessments* (Address at 41st annual conference on Taxation, sponsored by the National Tax Association, Denver, Colorado, Oct. 4, 1948). (Processed)

²⁰ E. A. Norton, "Land Classification as an Aid in Soil Conservation Operations," *The Classification of Land*, *op. cit.*

²¹ *op. cit.*, p. 2.

²² The technique used in Washington is fully described in each Extension leaflet containing the land classification maps and in A. W. Peterson, M. T. Buchanan, and B. D. Parrish, *Economic Land Use Classification in King and Snohomish*

Counties, Washington, and its Influence on Full-Time Farm Returns. Washington Agr. Exp. Sta., A. E. 5, rev., Pullman, Washington, 1944. Also see the articles by B. D. Parrish, A. W. Peterson, and O. H. Maughan cited above. A. W. Peterson presented the essential parts of these earlier studies at the Corvallis Conference.

²³ The counties that were mapped are Clark, Cowlitz, Grays Harbor, King, Lewis, Pacific, Pierce, Skagit, Snohomish, Wahkiakum, and Whatcom counties. The maps were prepared by the Division of Farm Management and Agricultural Economics of the Agricultural Experiment Stations and the Division of Progress and Industry Development of the Washington State Department of Conservation

(Footnote 23 continued on page 177)

with the maps describe these classes, point out research evidence of income variation per farm by classes, and indicate ways in which knowledge of this variation may be used by farmers and others. The maps call attention to the great differences that exist in the economic productivity of farm lands in different localities, and suggest the need for extensive readjustment in the intensity of agricultural production upon the land. The maps also suggest the need and provide the opportunity for farm management research and agricultural extension activities to recognize more fully the differences between farms and areas in the economic productivity of the land. Other major purposes of the classification were: (1) to provide a factual basis for the veteran farm-settlement guidance program; (2) to provide a stratification of land areas for research; (3) to indicate differences in rate of capital accumulation; (4) to indicate land development potentials; (5) to provide the limits within which research results may be generalized; and (6) to afford an opportunity to plan extension programs appropriate to each land class. Individual farms, which deviate from the modal type of a given land class, however, may require special consideration in the planning of extension programs.

Basic Characteristics of the Washington Technique. "The basic factor on which full-time farms are classified is their differing abilities, because of differing combinations of physical resources, to produce income and provide for an accumulation

(Footnote 23 continued from page 176)
and Development, with the assistance of county commissioners, local farmers, Agricultural Extension Service, Farm Credit Administration, Soil Conservation Service, and the Soils Section of the Division of Agronomy of the Agricultural Experiment Station.

²⁴ Division of Farm Management and Agricultural Economics, Agr. Exp. Sta. State College of Washington and the Division of Progress and Industry Development, State Dept. of Conservation and Development and other cooperating agencies. *Economic Land Use Class Map, Skagit County, Washington*, 1945.

of capital over a long period of time. Farms producing comparable levels of income, irrespective of location or type of farming, are given the same Economic Land Use Class rating. The classification of an area is determined by the level of income of typical farms within that area; the boundaries of the area are decided on the basis of similar conditions of soil, topography, and climatic factors." The approximate level of net farm income is estimated by a visual inspection from the road of each farm by the trained classifiers as they drive past each farm. The size and condition of buildings, evidence of the amount and rates of production, indications of size of business, machinery and equipment, kind and condition of crops, number and quality of livestock are used as guides to a reasonable estimate of farm income.

The basic criterion in the classification is the assumption (based upon a more or less rigorous statistical proof) that differences between land classes represent corresponding differences in net farm income *per farm unit* rather than upon the physical or economic productivity *per acre* as has been the criterion in many other classifications.²⁴

Similarity of and Differences Between the Cornell²⁵ and Washington Classification Systems. The technique that was used in preparing the maps of the Washington classification differs only slightly from the so-called Cornell Method of land classification, which was developed in the late 1920's and early 1930's at Cornell Uni-

²⁵ The Cornell Method is described in the publications by A. B. Lewis, in National Resources Planning Board, *Land Classification in the United States*, cited above, Chap. XIX, pp. 125-131. It has been reviewed critically by Howard E. Conklin and Sherwood O. Berg in *A Preliminary Report on Developments in Land Classification Methods*, Dept. of Agr. Econ., Cornell University A. E. 688, Ithaca, 1948, 75p. (Processed.) More recent developments in the New York techniques were presented by Howard Conklin at the meeting of the American Farm Economic Association in Laramie, Wyo., Aug. 19, 1949, under the title, "Land Economic Research—New Directions—East."

versity and subsequently has been used extensively in New York and certain other states. The important points of apparent differences between the two systems have been largely eliminated by recent changes at Cornell in mapping procedure, definitions of land classes, and interpretation of the results as reported by Conklin and Berg. Both systems classify areas on the basis of income on full-time farms. Cornell procedure separates from other farming areas those which are used largely for rural residential purposes. These areas are not classified as to grade. Outside of the residential areas, part-time farms are more or less ignored. Thus in New York as in Washington classification is made on the basis of full-time commercial farming opportunities.

Critique of the Washington System of Land Classification

Because of similarities of procedures and in view of the issues which have been raised with respect to interpretation, appraisal of the Washington classification system should be made in the light of developments in the criteria and procedures at Cornell.

Classification in Terms of Full-Time Farming. The distinction between full-time and part-time farms in the Washington context is consistent with the specification that the classes show differences in the ability of farms to produce net income per farm.

Part-time farms ordinarily do not return net farm incomes per farm that are as high as those returned by full-time farms located upon similar physiographic land types, but the net income per acre may be comparable.

From a technical viewpoint there are those who doubt the ability of enumerators using the Cornell Method in the field under a context limited to full-time

farming to avoid being influenced by the evidences of past and present part-time farming activity. Most of those who have used the method, however, have confidence in the ability of trained enumerators to differentiate between part-time and full-time farming. Statistical tests are not well adapted to settle this contention. From the viewpoint of general usefulness of the maps in agricultural planning, the elimination of part-time farms from the context in a region characterized by frequent and widespread part-time farming suggests the need for a supplementary classification in terms of part-time farming.

Net Income vs. Intensity of Use. The distinctive characteristic of the Cornell Method in its earlier stages of development was its reliance upon the most recent past experience of farmers in an agricultural region as projecting for some time into the future local differences in the intensity of production activity that the land resource profitably can absorb. A. B. Lewis recognized the significance of income with respect to his land classes in Niagara County, New York, when he stated: "The fundamental difference between land classes is in the capacity of the land to produce income. Since expenses must eventually be repaid out of income this difference may also be expressed in more practical terms as a difference in the degree of intensity of use to which the land is adapted. Intensity is a broad term, covering all of the contributions toward production that are made directly by farm operators, and indirectly by lenders, landlords, units of government, public utilities, laborers, and all other suppliers of productive goods and services."²⁸

²⁷ How
p. 27.
²⁸ *Ibid.*,
statement
²⁹ *Ibid.*,

²⁸ A. B. Lewis, *Relations of Income to Capital on Farms, Newfane-Olcott Area, Niagara County, New York*, U. S. Dept. of Agr., Farm Credit Administration, Washington, May 1941, p. 97.

A recent research made by Plath in Livingston County, New York, has been appraised by Conklin and Berg.²⁷ In this research long-run average operator's labor earnings are considered to be "the fundamental farm classification criterion." Cornell uses basic farm organization and land use data from a short-schedule survey to indicate approximate labor earnings.²⁸ Land classes are considered to be "geographic associations of farms that are differentiable on this basis." Intensity and economic rent are denied any special importance except insofar as intensity may be an "easily measurable indicator of incomes."²⁹

Washington uses net "family farm earnings" as a criterion of land classes. A more important difference in the two methods lies in the manner in which each procedure arrives at the measure of farming returns. In the place of the "short-schedule survey" used by Cornell, Washington uses various indicators such as "visible capital accumulation" and "intensity of land use" to reflect differences in past income level. Specific farm visits are made only in those cases where certain farms appear markedly different from normal for the region. In these cases, informal inquiry is made concerning the apparent disparity between the farm in question and the surrounding area. Final lines are based on physical land combinations. The farm classification influences the grade level but has very little influence on the exact position of the boundaries of a given grade. This type of procedure has been criticized on the grounds that it is based upon the assumption that farm capital accumulations visible from the road represent capital produced in place and not im-

ported capital or a heavy credit burden. Associations of land class and these various measures of income and intensity, however, provide specific case evidence of their validity as *indicators* if not absolute *measures* when used in accordance with the designer's intent.

Instances of apparently opposite conclusions occasionally drawn from studies such as those made in Oregon³⁰ leave one with the thought that further intensive study of techniques is necessary to solve the problem of indicators. The Oregon study, however, does not test the validity of an economic land classification since the land adaptability classes used in the study were not defined as classes of land showing differences in returns per farm. However, they do reflect differences in adaptability of varying intensity of agricultural use.

Significance of Physical Factors vs. Institutional and Social Factors in Land Classification. Musbach and Johnson have observed that the use of land classification maps as a tool of research in aid of planning for agriculture often carries with it a tendency to place undue emphasis upon differences in the physiographic attributes of land as an instrument of production and inadequate emphasis upon differences in the man-caused attributes of land as location or space occupied by farms within the setting of the economic, social, and institutional environment.³¹ Undue emphasis upon the physiographic environment in localities in which the man-made environment is rapidly changing may lead to undue inference that the classes drawn on maps represent rigid differences in the adaptability of the land for varying intensities of use. In the instance of the Washington

²⁷ Howard E. Conklin and Sherwood O. Berg, *op. cit.*, p. 27.

²⁸ *Ibid.*, p. 33. Also see appendix p. 76 for an income statement showing the meaning of terms.

²⁹ *Ibid.*, p. 27.

³⁰ G. B. Davis and D. C. Mumford, *Farm Organization and Financial Progress in the Willamette Valley*. Oregon Agr. Exp. Sta. Bul. No. 444, 1947, pp. 46-48 and 68-69.

³¹ See William F. Musbach and V. Webster Johnson, *op. cit.*

classification, the rigidity that is postulated is the economic productivity of the land, defined as the ability of full-time farms to produce income and provide for capital accumulation over a long period of time. It is implied that full-time farms in western Washington differ as to this ability mainly because of differing combinations of physical resources. It is further implied that the present levels of differences will persist over a long period of time, except as the physical resources are modified by irrigation, drainage, or clearing.

The influence of the economic, social, and institutional environment, or various phases thereof, upon the relative levels of income per farm no doubt exerts itself with various degrees of rigidity in various regions and localities depending upon the relative permanence of the various features of the environment. In an older settled region, such as New York, institutional and social differences characterizing the earlier period of settlement and development may long since have given way to physiographic and economic differences as major factors establishing the level of income per farm. In a recently settled region, however, differences in settlement patterns and institutional factors may be more prominent. If this is the case, land classes mapped according to recent past experience, as indicators of potential capabilities, would have less significance in the newer region. The attitude that one takes on this point is important because this attitude influences one's outlook upon the significance of the classification as indicating needed adjustments in agricultural land use and farming patterns.

The conclusion presented in the publications of the State College of Washington arising from this land classification work is that the differences in income per full-time farms that have been

observed to exist in western Washington counties will tend to persist over a long period of time, except as the physical resources are modified in some local areas by reclamation and land clearing. The land use and farm management implications derived therefrom indicate that the desirable direction of change is toward part-time farming, rural residential use, or public ownership of most of the present farm land in the poorer land classes. Before these implications are fully accepted, however, attention should be given to exploring the extent to which the levels of farm income in the poorer classes are low because of features of the environment that might be modified or removed by individual or public action. In this way the need for widespread dependence upon off-farm work for land-use zoning or for public ownership in poor land areas may be at least partially averted.

Pending further exploration of the relative influence of physical and human factors influencing the recent past differences in incomes per farm, an economic land classification such as has been developed in Washington should not be looked upon as necessarily reflecting inevitable potential differences in the incomes of farms in newly settled regions or regions undergoing marked social, economic, or institutional change. This limitation is very significant for classification uses such as area land use planning, or rural public works planning, which must take potential land use capabilities fully into account. It is not nearly as significant, however, for such uses as guidance of farm settlement or farm management recommendations where the current use capability of the land is the primary consideration.

Consensus of the Conference

The Corvallis conference was conducted as a series of open forums in which many

differing and sometimes conflicting opinions were expressed. Many of these differences were not resolved, in part for lack of factual information concerning the debatable points, but the conference did help to clarify the needs and purposes of economic land classification in the minds of western professional groups. Probably the greatest disagreement lies in the realm of methodology but *general purpose* versus *special purpose* classification also is still an issue. This is easy to understand in view of the multitude of purposes which may be served by economic land classifications.

Insofar as these differences in point of view permit, opinion as expressed at the conference and as interpreted by the committee may be summarized as follows:

Definition of Economic Land Classification. Economic land classification is a technique used to express, usually cartographically, integrated and correlated physical, economic and social data common to selected areas. These data, characterizing delineated land areas, may be used in a wide field of divergent subject matter. Many of these applications have had the objective of making wise decisions about land and its use. Like all classifications, economic classification of land involves the establishment of categories. Within each category, by means of criteria used in its delineation, some economic or social characteristic or characteristics (usually income, use, or tenure) are given a specified degree of uniformity. Because of the diversity in their purposes, economic classifications of land developed in the various investigations have not had, do not have, and do not necessarily need to have a close resemblance one to another.

Purposes of Economic Land Classification. An economic land classification may be a *general purpose* classification, that is, it may serve many purposes. As an example of the general-purpose, economic land classification the Washington procedure and criteria are going through an experimental period of development. In view of strong opinions in favor of and against such general purpose classifications it would seem desirable from the viewpoint of the interested professional

fields that this program be given every opportunity possible to become perfected in its details and tried in its application.

On the other hand, economic land classification may be designed to serve a *special purpose*. The planning of irrigation, drainage, flood control and soil conservation projects may require highly specialized types of economic land classification. Creditors desire a classification based upon present incomes, farm and nonfarm. Planners want the basic physical and economic data presented, with or without the classification. Frequently they desire an interpretation in terms of potential conditions. Extension workers need economic information which is applicable at the farm level. For such purposes economic land classification must be performed in sufficient detail to be useful to small groups and, to a limited extent, to individual farms if it is to serve the needs of extension programs.

Land class maps prepared for one specific purpose may be modified, in some cases, so as to be useful for other purposes.

Importance Attached to Physical Factors. Economic land classifications vary in the degree to which they emphasize physical data. The emphasis to be placed upon physical, economic, social and institutional factors depends upon the purpose to be served by the classification. Some workers favor an economic classification which follows physical data so closely that the economic boundaries coincide with certain physical boundaries. Using such procedure, these physical resources of farms within an area are comparable. Other workers prefer an economic classification merely coordinated with physical data.

Intensity of Classification. Economic land classifications vary in the intensity of work done in making them. They may be carried out slowly, intensive, detailed and accurate and, therefore, costly; or they may be rapidly executed, extensive, broad and approximate and made at low cost. The function of the intensive land classification may be to serve a special and exacting purpose or to develop principles, techniques, criteria and indicators designed to increase the accuracy and reliability and at the same time reduce the cost of the more extensive types of classification. Rapid and inexpensive methods of economic land classification are needed but more basic research is required to perfect such methods.

Local Public Participation. Closely related to intensity of economic land classification is the extent of farmer participation. Farmer participation in some phases of the work is desirable. In some cases the preliminary classification is prepared by technicians and checked by local people before publication or application to the intended purpose. In others the checking proceeds along with the work. Again, farmers and other local people may actually make the classification with more or less guidance. More study of past procedures may be required in the appraisal of these different methods.

Permanency of Classification. Whereas the needs and purposes of economic land classification are dynamic, maps representing such classifications are static and may require revision. However, sponsors of certain classification programs claim that relative economic measures may be applicable for many years.

Relation of Classification to Land Use Improvement. The improvement of land use is only one of the purposes of economic land classification. Moreover, economic land classification is only one of the means by which land use improvement may be attained. Where improvement in land use is the objective, land classification may designate where remedial measures may be effective. Research covering economic and social aspects, such as the effectiveness of different remedies or the degree to which farmers may be expected to adopt improvements once they are known and available, may be required either as criteria of the classification or to supplement it. Under conditions where alternative land uses enter the picture, the over-all detailed considerations of benefits and costs to farmers and to the community are required. Such considerations may go beyond the scope of economic land classification but are closely related to it and may provide its foundation.

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I. Supreme Court Views Federal Authorization and Merging of Motor Carriers

By JOHN J. GEORGE*

DECLARED purposes of the Federal Motor Carrier Act include (1) protecting inherent advantages of motor carrier transportation; (2) encouraging desirable economic conditions in the public interest; (3) obtaining adequate service at reasonable rates; (4) coordinating motor carrier service with other types of transportation; (5) developing highway transportation adequate to serve commerce and national defense; and, significantly (6) cooperation of federal and state governments and with motor carrier organizations in the enforcement of the statutory provisions.¹

Warrant for enactment of the Federal Motor Carrier Act was found in the development "in the private interest" of the "sprawling, chaotic, and cut-throat industry;" and regularizing of the enterprise in the public interest would expectedly involve "stepping on a good many toes."²

Through Division Five, created in 1936 especially to administer the FMCA, the Interstate Commerce Commission has handled about 90,000 applications in some 20,000 cases. From this mass of activity many resulting questions have been settled; relatively few have gone to

the lower courts, and of these few about two dozen have reached the Supreme Court. This essay attempts to examine these cases as to contests between motor carriers and government, between different types of motor carrier, between carriers of the same type, and between motor carriers and rail carriers.

Authorization to Operate³

Statutory Requirements. Under the statute, interstate motor carrier⁴ operation must be authorized by the Interstate Commerce Commission. Common carriers in bona fide operation on June 1, 1935 and since were entitled by the statute to obtain the certificate of public convenience and necessity without *proving* public convenience and necessity, provided they apply to the ICC within 120 days after October 1, 1935, the effective date of the Act. A contract carrier⁵ in bona fide interstate operation on July 1, 1935 was made eligible to permits from the ICC also as a matter of right.⁶

Recognition of vested right as attaching to previous bona fide operation derives from established practice among the states when they instituted regulation, and constitutes the pertinent provision of the FMCA known as the grandfather clause.

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† Public Act 255, 74th Cong., 1st Sess.

² Dissenting opinion of J. Jackson in Carolina Freight Carriers case, 315 U.S. at 493, 86 L.Ed. at 984 (1942).

³ Certification of common carriers by the ICC during the first five years of the FMCA is treated by the writer (with co-author) in *The Journal of Land & Public Utility Economics*, February and May, 1941. Contract carrier authorization in same period is presented in *Cornell Law Quarterly*, June 1941.

⁴ Those carriers whose vehicular operations do not cross state line but transport interstate shipments are exempted from ICC jurisdiction if they hold a certificate from the state agency, or if the state concerned has an agency to

grant such certificates. As to the factors entering into "public convenience and necessity" see my "Factors in Granting Certificates of Public Convenience and Necessity," *Indiana Law Journal* 1930, p. 243.

⁵ The tedious struggle to differentiate legally between contract common carriers and to establish control over the former I have traced in two articles in *The Journal of Land & Public Utility Economics*; August 1933, pp. 233-46, and May 1937, pp. 163-173.

⁶ Being a recorded member of an NRA code established the bona fide character of the applicant for certificate or permit.

*Grandfather Rights Interpreted For
Common Carriers*

(A) *Meaning of Bona Fide Operation.* In its initial case⁷ involving the FMCA, the Supreme Court in December 1938, declared that:

"Exact definition of bona fide operation is not necessary." Because the Act is remedial and to be construed liberally, "the proviso defining exemptions is to be construed liberally and in harmony with the purpose of the measure and held to extend to only carriers plainly within its terms . . . to limit the meaning to mere physical operation would be to eliminate 'bona fide.' That would be contrary to the rule that all words of a statute are to be taken into account and given effect if that can be done consistently with the plainly disclosed legislative intent."

Finding no warrant for exercising the term "in bona fide operation" from the requirements of a grandfather certificate, the court in a unanimous opinion declared that applicant's operation in defiance of the Texas law for some time prior to the enactment of the federal statute put him beyond the realm of bona fide operation and constituted valid grounds for ICC denial of the grandfather certificate sought under the FMCA when it became effective.

What the term "in bona fide operation" requires and precludes was viewed thus by the Court:

"The expression 'in bona fide operation' suggests absence of evasion, excludes the idea that mere ability to serve as a common carrier is enough, includes actual rather than potential or simulated service, and in context implies recognition of power of the state to withhold or condition the use of its highways in the business of transportation for hire. Plainly the proviso does not extend to one operating as a common carrier on public highways of a state in defiance of its laws."⁸

⁷ *McDonald v. Thompson*, 305 U.S. 263; 83 L.Ed. 164 (1938).

⁸ *Id.* at 266.

⁹ *U.S. v. Maher*, 307 U.S. 148; 83 L.Ed. 1162 (1939).

¹⁰ *Id.* at 156 and 1168 respectively.

Section 206 requires that a recipient of a grandfather certificate has been in bona fide operation as common carrier on June 1, 1935 over the route or routes or within the territory for which application is made, and has so operated since that time. These requirements have not been met by an applicant who on the specified date was operating exclusively irregular anywhere-for-hire service, making only occasional trips outside the state on the highway specified in the application, and who began the regular operation over the route only on May 29, 1936.⁹ Scope of the application for the grandfather certificate must be considered strictly according to this unanimous opinion: The ICC need not canvas all questions of public and private interest implicit in a certificate application where the applicant limits himself to seeking benefits of the grandfather clause.¹⁰

The standard of measuring bona fide operation in an area and over routes specified in an application must be actual service, not simulated service, not potential as a holding out to serve.¹¹ To the same effect, it was later emphasized that to constitute bona fide operation, the service must be substantial rather than incidental, sporadic or infrequent.¹²

The purpose of the grandfather clause was to assure to its recipients substantial parity between future operations and bona fide prior operations, said the Court in the Alton Railroad case;¹³ bona fide operation as a common carrier in Oregon under a grandfather clause was not disproved or dispelled by the fact that the applicant had obtained in 1936

¹¹ *McDonald v. Thompson*, 305 U.S. 263; 83 L.Ed. 164 (1938).

¹² J. Douglas in *U.S. v. Carolina Freight Carriers Corp.*, 315 U.S. at 480-1, citing *Loving v. U.S.* 32 Fed. supp. 464, affirmed in 310 U.S. 609, 84 L.Ed. 1387 (1942).

¹³ 315 U.S. 15, 86 L.Ed. 586 (1942).

a permit to operate as a contract carrier in the same state.

Lacking explanation of why he failed to make any delivery to any point in Arkansas for fourteen months between eligibility date and hearing on his application, applicant Fleming could not establish the bona fide character; he was validly denied authorization for the Arkansas portion of the service for which he sought certification. A mere holding out to serve is not sufficient "to bridge the gap extending through and beyond one entire production year, since the applicant carries the burden of establishing his right to the statutory grant."¹⁴

(B) *Operator-applicant Cannot Substitute a Different Type Vehicle.* Recipient of a grandfather certificate for seasonal door-to-door passenger service between hotels New York and various points in specified counties in upstate New York via New Jersey was restricted, on complaint of competing carriers, to transporting not more than six passengers in any one vehicle. Later, proposed substitution of buses for the certified type of vehicle was validly denied, the Court recognizing that the extent of the Commission authority to impose such a restriction depended on the meaning of the term "business" as employed in Section 208.¹⁵ Such substitution would transform into regular bus line service seasonal service offered by the small vehicles, which seasonal service distinguishes the applicant's business from the service offered by the regular lines operating heavier equipment. The ICC can hold the carrier to the vehicle type specified, but the carrier may add to the units of the type authorized. The Court emphasized that the statute contemplated substantial

parity between future and prior operations.¹⁶

(C) *Certificate Restrictions Imposed on Territory and Points Served, Routes Covered, Commodities Carried.* Section 203 (a) (14) of the original FMCA, 49 FCA 303 (A) (14) defines common carrier by motor vehicle as:

"Any person who or which undertakes, whether directly or by a lease or any other arrangement to transport passengers or property, or any class or classes of property, for the general public in interstate or foreign commerce by motor vehicle for compensation, whether over regular or irregular routes, including such motor vehicle operations of carriers by rail or water, and of express or forwarding companies except to the extent that these are subject to the provisions of Part I."¹⁷

The above definition prevailed when the ICC heard the application of Carolina Freight Carriers Corporation on July 10, 1940,¹⁸ and granted a certificate for common carriage over irregular routes. But the ICC reduced the area in which the applicant could operate; allowed the carrier to transport only about a dozen of the numerous articles; and restricted the carrier to hauling specified commodities of the allowed list as between specified points. On review the lower court sustained the geographic limitations imposed, but disallowed the reduction of specific commodities carried earlier and the specific points served earlier. The lower court observed that such restrictions had not been imposed on regular route carriers and that Congress had made no such distinction between regular and irregular route carriers. Thus the stage was set for the ICC to bring to the highest tribunal a monumental case in 1942.¹⁹

¹⁴ 315 U.S. at 24, 86 L.Ed. at 596.

¹⁵ Carrier could have easily discovered this meaning from wording used in Section 208.

¹⁶ *Crescent Express Lines v. U.S.*, 320 U.S. 401, 88 L.Ed. 127 (1943).

¹⁷ This definition of common carriers was modified by Act of September 18, 1941. See footnote 39 below.

¹⁸ 24 MCC 305.

¹⁹ *United States v. Carolina Freight Carriers Corporation*, 315 U.S. 475, 86 L.Ed. 971.

The Supreme Court sustained the limitations incorporated into the irregular route certificate, observing that: "The precise delineation of the area or the specification of the localities which may be served has been entrusted by Congress to the Commission." Here the purpose of the grandfather clause is not denied:

While service to and from all points in the states included in the application was not allowed, the reduction was determined by the substantiality of service. Consideration was given to the characteristics of the irregular route carriers and their role in the national transportation system. That involved a weighing of the specific evidence in the light of complexities of this transportation service. The judgment required is highly expert. Only where the error is patent may we say the Commission transgressed."²⁰

Granting that the "substantial service actually rendered may have been confined to narrow limits," the Court cautioned that the "ability to render the service throughout the wide reaches of the territory which the applicant professed to be willing to serve may not have existed." The Court recognized the relevancy between the characteristics of the transportation service performed and the territorial scope of operations the Commission may authorize, and also the awareness of that agency to its responsibility in fixing the precise area in which a grandfather operator is to serve, and to coordinate the various transportation agencies which make up the national transportation system.²¹

No transgression of the statutory purpose of the grandfather clause was discovered in the ICC restriction of operations to the part of the territory regulated, and to particular points in the other part of the area.

As to reducing the articles previously transported, the Court conceded that

regular and irregular route carriers come within the same statutory definition, and that a carrier offering and actually performing transportation service can "be limited to a few articles only," but, on the following extensive reasoning, disallowed the reduction of the list of articles to be carried.

(1) Where an applicant has transported a "wide variety of general commodities he cannot necessarily be denied the right to carry others of the same class merely because he never carried them before. And where he has carried a wide variety of general commodities, he cannot necessarily be restricted to those he carried with more frequency and in greater quantities than the others."

(2) The Commission is not authorized to "atomize the prior service" of an applicant, "product by product, so as to restrict the scope of his operations", where there is substantial evidence in addition to his holding out that he was in bona fide operation as a common carrier of a large group of commodities, or of a whole class or classes of property. There might be substantial evidence of such an undertaking, though the evidence as to any one article was not substantial. The broad sweep of his prior service may indeed have made the carriage of any one commodity irregular and infrequent though his prior activities viewed as a unit may meet the test of "bona fide operator as common carrier" within the scope of his holding out.

(3) Once the territorial area of operation has been decided—and this may vary considerably on the basis of difference between regular and irregular route carrier types—the statutory test for whether applicant was in bona fide operation as common carrier in statutory periods must be the same for irregular as for regular route carriers. "The statutory differences between regular and irregular carriers lies only in the territorial scope and pattern of the operation." Facts sufficient to show the bona fide operation of a regular common carrier must be accepted as adequate to establish the similar character of the irregular route carrier.²²

Thus the commission view that the

²⁰ *Id.*, at 485-6 and 981; respectively.

²¹ *Ibid.*

²² *Id.*, at 479 and 979, respectively.

grandfather clause aimed to limit future operations to situations in which a carrier proves his right by offering substantial evidence lest doing otherwise would be to invite the evils intended to be prevented by the statute, namely, congestion of highways, destructive rate practices, and unlimited competition, and that "common carriers expected to maintain regular service in whatever volume offered on designated routes cannot operate economically and efficiently if other carriers are permitted to invade such routes for the sole purpose of handling the cream of the traffic available thereon in so-called irregular route service", was disallowed to whatever extent that view of the Commission "establishes a different test for commodities" to be transported by the two types of carrier "is erroneous as a matter of law."

A third question in the Carolina Freight case concerned Commission limitations placed on transporting particular commodities between stated points and in one direction. The grandfather certification for geographically extensive operations in eastern United States allowed transportation of beer from Newark, New Jersey, to two points in North Carolina, but not from Baltimore to North Carolina. To this restriction the Court said that if the carrier had established that it had been a common carrier of beer on southbound trips prior to statutory date, it would be entitled to transport beer from any northern point to any of its destinations in the South. The Court found no evidence that the carrier had limited its offer to haul beer to shipments from Newark. The natural and normal course of business as shown by the record would have to be disregarded in order to hold that the mere fact of hauling beer southward from Newark only constitutes conclusive evi-

dence that the carrier had so limited its transportation in the statutory period.

A wide variety of articles had been transported on the southward trip consistently with its offer to take any of the articles from any of the points.

"Where it was actively soliciting whatever it could get at any of the points, it does violence to common carrier status to make the origin or destination of future shipments conform to the precise pattern of the old. Such a pulverization of the prior course of conduct changes the basic characteristics of the carrier. Such procedure is beyond Commission authority; for it "there is no statutory sanction."²³

The Court gave realistic consideration to the economic effects of certificate restriction. Limiting what may be hauled on any-direction trip may produce partially loaded or empty vehicles on the return trip, and might "drive the enterprise to the wall." Forbidding taking beer shipments from Baltimore and points south for delivery further south "is a patent denial of appellee of that 'substantial parity between future operations and prior bona fide operations' which the statute contemplates." Its prior opportunity should not be restricted beyond the requirements of the statute, because the statute is to be construed liberally so as to safeguard "the position which those like the appellee have struggled to obtain in our transportation system. To freeze them into the precise pattern of their prior activities as was done here may not only alter materially the basic characteristics of their service," but it may constitute "a denial of their statutory rights."²⁴

Because considered unclear, the precise grounds on which the Commission determined that particular commodities could be transported by this carrier, and that some of them could not be carried between stated points, and

²³ *Id.*, at 488-9 and 982, respectively.

²⁴ *Ibid.*

because the Court found it impossible to say whether the standards set forth in the FMCA had been applied by the Commission to the facts of this case, the district court order setting aside the Commission order was affirmed by the Supreme Court.

The Court emphasized that Congress had set up statutory standards pursuant to which grandfather rights should be granted, denied that either Commission or courts could deviate from these standards, reminded that court review of ICC action is provided in order to protect policy established by Congress, and admonished that judicial review includes "certainly . . . an inquiry as to whether the Commission has employed those standards." It suspected that an erroneous construction lies hidden in vague findings, and viewed statutory rights melting away under such impact.²⁵

We are assured that no intrusion of the administrative domain results from the Court insistence that Congressional requirements as to findings essential to and basic for the Commission action must be met. "Only when the statutory standards have been applied can the question be reached as to whether the findings are supported by the evidence."²⁶ That is why we cannot say that the Commission would be justified in placing the same restrictions on the certificate in this case had a correct construction of the statute been taken."²⁷

In concluding its argument the Court refused opinion as to the scope of the certificate which would be granted, holding that to reach such an opinion involves a weighing of evidence and "the exercise of an expert judgment of the intricacies of the transportation problems which are involved. That

²⁵ *Id.*, at 489 and 983, respectively.

²⁶ Sufficiency, insufficiency, and incompleteness of evidence to support the findings of the National Labor Relations Board over a decade of developments I have presented in

function is reserved exclusively for the Commission. Our task ends if the statutory standards have been properly applied."

In sharp dissent Justices Jackson and Frankfurter accused the Court of doing lip service to the doctrine of Court refusal to disturb the judgment of the Commission on a matter delegated to it unless the circumstances deemed by the Commission to bring an applicant within the regulatory orbit are "so unrelated to the tasks entrusted by Congress to the Commission as in effect to deny a sensible exercise of judgment." They ridiculed upsetting the Commission by such petulant quibbling of the Court as: "We have our doubts," "We are not confident," "We are not satisfied;" they see the Court putting on the Commission the burden of proof rather than on those who contest the validity of an administrative decision on whom rests the obligation "to satisfy the Court that the decision is wrong." Having told the Commission what it thinks of its mishandling of the law the Court is shamed by the dissenters for its now refusing "to tell the Commission what it [the Court] thinks about the evidence until the Commission [under the remand order] tells what it thinks about the law."²⁸

For being "not confident of the ICC applying to this irregular route carrier the same test on the commodities which is applied to regular route carriers," the dissenters chided the Court with "we cannot be confidently unconfident." The ICC was defended for making the differences inherent in the two types of service the basis of distinction between the irregular and regular route carriers. That agency received credit for having tested

"Evidence in NLRB Cases in the Supreme Court," *Cornell Law Quarterly*, March 1945, pp. 350-71.

²⁷ *United States v. Carolina Freight Carriers Corp.*, 315 U.S. at 490; 86 L.Ed. at 983.

²⁸ *Id.*, at 492 and 984, respectively.

the two types by the regularity and substantiality of their actual operations, a test by which the two types may have unequal abilities to comply. But to reach such different results on such different facts did not imply either the use of different legal standards or discriminatory application. Quoting from a Congressional source,²⁹ the dissenters observed that administrators of the statute "must be aware, as the framers of it were, that that the 'grandfather clause . . . has been fixed in fairness to bona fide motor carriers now operating on the highway and limited so as to prevent speculation which is highly important'."

Propriety of the statutory purpose and of the Commission effort to effectuate it in the Carolina Freight Carriers case received special attention by the dissenters:

"In trying to limit the injury caused by the transition from a purely private enterprise to a regulated public service industry, the general plan was to preserve to private owners the transportation values evidenced by the actual conditions of operations on June 1, 1935, and to exempt them from meeting the requirements of 'public convenience and necessity' as to such operation. Those who obtained such 'grandfather' rights are not, however, limited to them. They may expand their territory or extend their services by proving that public convenience and necessity will be served thereby. Thus the scramble for 'grandfather' rights represents the effort to preempt territory and service privileges without submitting to the test of the public interest. Public interest would be defeated at its very outset if the Commission permitted the bulk of the industry to escape the public interest by inflated claims under the 'grandfather' clause. The nature of the general task of reducing the claims of 'grandfather' rights to defined and reasonable limits consistent with the plan of public regulation is disclosed by the record in this case."

²⁹ Report of the Committee on Interstate and Foreign Commerce, H. Report 1645, 74th Cong., 1st Sess.

³⁰ Though direct litigation on authorization of bona fide motor carriers is presumed a *fait accompli*, our detailed con-

Further chiding of the Court and defense of the Commission were made by the dissenting duo:

"When a carrier claims grandfather rights to serve the Atlantic seaboard as a general common carrier with equipment consisting, on the critical date, of eight trucks, the Commission is obviously forewarned that it must guard against granting franchise privileges that will result in their having a speculative value to the carrier rather than a service value to the public. The Commission was quite right to take the measure of the territory and service of such a claimant and to give him a certificate covering his actual substantial operations. We should not substitute our own wisdom or unwisdom for that of the administrative officers who have kept within the bounds of their administrative powers."³⁰

In many respects *Howard Hall Co. v. United States*³¹ constitutes a companion to Carolina Freight Carriers case. A requested area of destination consisting of a 100-mile radius of Birmingham was reduced to a 10-mile radius on showing that prior to critical date only 55 shipments were made to or from the 100-mile radius as against 875 to and from the city itself, and that after the critical date only 270 shipments were handled for the adjacent area against more than 2000 for the city itself. Denying the argument that since service is allowed to and from all points in each of the several states (which was part of the certificate request actually granted by the ICC) similar authorization service to all points in the 100-mile radius of Birmingham must be granted, the Court observed that earlier operation to various points in a region may or may not warrant authorization of service throughout the whole region.

sideration of the principal case finds justification in the intricately involved operational situation, basic considerations chosen by the majority, and sharp dissent therefrom by the minority, and the possible future application of official experience here to regulation of other activities.

³¹ 315 U.S. 495; 86 L.Ed. 986 (1942).

Citing the Alton and Carolina Freight cases, the Court observed that "the precise geographical pattern for future operations is the product of an expert judgment based on the substantiality of evidence as to prior operations; the characteristics of a particular type of carrier, the capacity or ability of the applicant to render the service, and the like." The Court insisted that the ICC reduction of the 100-mile radius request to a 10-mile radius destination zone rested on the above standards; therefore, it approved the restriction.³²

Grandfather common carrier applicant Hall fared differently relative to the commodities authorization. Though he had held out as carrier of general commodities prior to critical date, he had actually transported only particular commodities; the Commission restricted allowable commodities to those actually carried previously. On this restriction the Court refused to pass judgment, saying, as in the Carolina Freight case, that requisite findings to support this limitation were lacking. "The mere fact that particular commodities had never been transported between designated points in that territory would not mean that authority to haul them between such points should be withheld." Acknowledging that the status of an applicant may vary from one part of the territory served to another part, and that applicant may have restricted himself to hauling particular commodities, the Court was not "clear that the Commission had applied those tests in this case," and concluded that the ICC had, in its determination of the question, relied improperly on one³³ of its two earlier conflicting decisions, and remanded to the Commission the com-

modities limitation in order that the basic and essential findings required under the rule in *Florida v. United States*³⁴ could be made.³⁵

Further consideration of "territory" within which bona fide operation was carried on at eligibility date appears in *Alton Railroad et al. v. United States*. Though applicant Fleming had delivered new motor vehicles from Detroit factories to only a few points in specified states, prior to eligibility date, he obtained certificate authorization to operate over irregular routes through specified states. Seventy-one railroads joined in petition for injunction against allowing Fleming the "expanded" service, contending that he should be limited to serving the points he served during the critical period.

Recognizing the gravity of the ICC authorization to operate "in an entire state in which only a few points had been served," the Court held "territory" not to be a word of art. "Characteristics of the transportation service involved as well as the geographic area serviced are relevant to territorial scope of the operations which may be authorized under the grandfather clause." Admitting "actual rather than potential or simulated service" to be included in the test for bona fide service, the Court declared the test "does not necessarily restrict future operations to the precise points or areas already served." Characteristics of the particular service offered may produce irregular or sporadic trips to any particular locality, whereas these characteristics may have limited the earlier operations to just a few points in a wide area the carrier was willing to serve.

This recognition of characteristics of the many transportation services in determining the extent of territory covered

³² *Id.*, at 498-9 and 990, respectively.

³³ *Re Powell*, 9 MCC 785.

³⁴ 282 U.S. 194, 75 L.Ed. 291.

³⁵ U.S. 500-1, 86 L.Ed. 991. Jackson and Frankfurter dissented on grounds stated in their dissent in *Carolina Freight Corporation case*.

by the grandfather clause accounts for the Commission's certification of common carriers of household goods over irregular routes within a wide territory, similarly for oil-field equipment and supplies, and earlier likewise concerning transporters of new automobiles. The ICC authorized continuance of applicant's automobiles-delivery service to all points in 24 western states because of the nature of the applicant's holding out in the critical period; authority for its exercise of judgment is acknowledged by the Court, and the ICC exercise of the power favorable to Fleming received Court approval.

To the special objection of the railroads that Fleming should be allowed no grandfather rights to deliver to points in California, Washington, and Oregon, the Court answered that he had made some deliveries therein before June 1, 1935, and some therein since, and that the ICC was within its authority in holding this fact sufficient evidence of bona fide operation.³⁶

(D) *Certificating Service Additional to That Requested.* Two months before eligibility date a carrier who subsequently applied for a grandfather certificate began offering particular additional service in interstate commerce between points within Minnesota. After applying for a certificate covering the total service, applicant withdrew request for the above portion. Having found that the particular additional service was, like the rest, warranted by public need, the ICC included in the certificate that portion for which applicant had withdrawn request. Accepted by the applicant, the certificate was subsequently attacked by a railroad company denying the ICC power to authorize the "un-

sought" service. The court found warrant for such authorization in the Commission authority to specify in a certificate "such reasonable terms, conditions and limitations as the public convenience and necessity may from time to time require, including terms, conditions, and limitations as to the extension of the routes of the carrier."³⁷

Where substantial evidence supports the Commission findings that public convenience and necessity justifies granting certificates for more service than was sought, courts cannot substitute their own inferences for those drawn by the Commission from testimony; nor should the Court attempt "to weigh anew the conflicts" in such testimony.³⁸

(E) *Railroad Becomes Motor Common Carrier: "Control and Responsibility Test."* The 1935 statutory definition of common carrier by motor vehicle as any person who undertakes "whether directly or by lease or by any other arrangement to transport passengers or property for the general public by motor vehicle" was significantly changed by the amendment of September 18, 1940, to mean any person which holds itself out to the general public to engage in transportation by motor vehicle in interstate or foreign commerce of passengers or property or any class or classes thereof for compensation whether over regular or irregular routes.³⁹

Prior to July 1, 1935, Chicago and Northwestern Railroad made contracts with motor truck operators to haul l.c.l. freight between various stations of the railroad. Twenty-three of these routes were parallel and substantially adjacent to the railroad lines. Resort to this

³⁶ *Alton Railroad Co. v. United States*, 315 U.S. 15; 86 L.Ed. 586.

³⁷ Citing Section 208 (a) 49 Stat., 49 USCA, 308A, 10A, FCA, Title 49 308 (a).

³⁸ *Chicago, St. Paul, Minneapolis, & Omaha Railroad v. United States*, 322 U.S.; 88 L.Ed. 1095 (1944).

³⁹ Opinion of Justice Douglas in 86 L.Ed. 979, citing Section 203 (a) (14) as amended by Act of September 18, 1940, Ch. 722, Sec. 18 (a), 54 Stat. at L. 920, 49 USCA, Sec. 303 (a) (14).

method of transportation was made to provide "an improved and more convenient freight service to the public in certain areas of light traffic, and in order to curtail car mileage and way freight service."

The railroad neither owned nor leased any trucks, and did not employ any personnel to operate the trucks. The service announced to the public functioned like this: Freight solicited by the railroad was transported on the trucks and under railroad bills of lading. Shippers were informed that shipment would cost the published railroad tariff, though they do not know whether shipment will go entirely by truck or partly by rail. The railroad kept direct and complete control of moving and handling the freight, coordinated the schedules of the trucks with those of its freight trains, and designated the "amount and particular freight to be moved." Truck operators issued no bill of lading, and had no relationships to the senders or recipients of the goods hauled. Railroad and truck workers loaded the freight at freight stations, and the railroad agent issued manifests to the truck drivers who in turn obtained signatures thereto from the railroad agent to whom the load was delivered.

This transportation was effectuated under contracts obligating the operators (not drivers) to provide vehicles satisfactory to the railroad to haul between stated freight stations according to railroad-fixed schedules, and to provide service satisfactory to the railroad. Operations were conducted under the contractor's own name, the trucks not displaying the railroad's name. Contractors agreed to comply with state, federal and local laws, and to indemnify the railroad for failure to do so, and "for all loss or damage of any kind resulting from the operations of the motor vehicles,"

contractors agreed that the railroad should obtain "liability insurance and property damage insurance on all vehicles at the contractor's expense up to a specified amount." The railroad retained an option to substitute other service for that of the contractors, should roads become impassable.

In due course the railroad asked the ICC to certificate the railroad under the grandfather clause for these motor truck operations. The Commission found that under these contract provisions the operations involved were "those of others as common carriers by motor vehicle in their own right and not those of applicant" railroad, and denied the grandfather certificate. This decision of the ICC was sustained by the district court as being "lawful and supported by substantial evidence."

On review⁴⁰ the Supreme Court held the Commission in error, not from lack of substantial evidence, nor from improper exercise of discretion, but because the Commission incorrectly applied to the facts of the case "the statutory provisions and Congressional intention relating to 'grandfather' rights of common carriers by motor vehicles." To sustain the position thus taken the Court advanced these chief points:

(1). The motor vehicle transportation is simply a new method of performing the all-rail freight service.

(2). "Congress did not intend to grant multiple 'grandfather' rights on the basis of a single transportation service," and consequently that "where a person holds himself out to the general public to engage in a single transportation service, consisting entirely or in part of motor vehicle operations, he is 'a common carrier by motor vehicle' within the contemplation of the statute." Congress intended that only such an applicant should receive grandfather rights on the basis of that

⁴⁰ *Thomson (C&NW trustee) v. U.S.*, 321 U.S. 19; 86 L.Ed. 979.

single service under Section 206 (a) of the act.

(3). There is no contention that anyone besides the railroad proposes to provide the general public "a single and complete transportation service to and from all points on its lines." The motor service offered constitutes an integral part of the complete service, is fully synchronized with train service, and possesses none of the "elements of an independent service offered on behalf of the motor vehicle operators;" the service "can be replaced or eliminated at the sole discretion of the railroad."

(4). Since the motor vehicle service involved constitutes a component part of rail service, and is supplemental to it, such service cannot be labeled freight broker or forwarder. Nor is the motor vehicle service either consignor or consignee of the freight. The railroad holds full responsibility to the shipper. Operators of the motor service are "independent" in name only, merely performing as they do, "part of the railroad's coordinated rail-motor freight service."

(5). The set-up involved constitutes an "other arrangement" specified in the original act and under the 1940 amendment definition of motor common carrier, the railroad is serving the general public with freight transportation "as part of its overall rail-motor freight service," and establishes the railroad as a "common carrier by motor vehicle within the meaning of the Act."

(6). The railroad alone is entitled to the certificate on the grandfather basis for the motor transportation constituting an integral part of its unified service. To hold otherwise would result in 23 certificates to motor operators now functioning in a single transportation service. Such a result would not comport with the Congressional purpose of regulation.

(7). The Commission is correct that the certificate in this situation should go to the one who exercises the direction and control of the motor operations, and assumes full responsibility for them to shippers and the general public. Beyond that the "control and responsibility" test is disapproved. The Commission errs, however, in discovering

this control and responsibility in the motor vehicle operators; instead, the statutory provisions and Congressional intent put that "control and responsibility" in the instant case in the railroad.

Consequently, district court dismissal of petition to enjoin the ICC order denying certificate to the railroad was reversed, and the cause remanded to the district court with direction to remand in turn to the ICC for appropriate action pursuant to the Supreme Court opinion.

Justices Douglas and Black, dissenting, insisted that close integration between the motor service involved and the rail service does not mean that segments of the line-haul operations may not comprise separate enterprises. They deny that multiple rights would result from attaching grandfather rights to the separate segments of operations. To so attach would allow "those rights to follow ownership of the enterprise." They saw no other way to protect "by the grandfather clause the position motor vehicle operators struggled to obtain in our national transportation system."⁴¹ They held that to rest grandfather rights on the integrated rail-motor service offered by the railroad is to grant to the railroad rights based on another man's business. To certificate the railroad on the basis of a holding out "is to give the 1940 amendment an effect which the Congress concededly did not intend." Convinced thus that certificating the appellant railroad gives it a preferred position contrary to the intention of Congress, the dissenters concluded that the ICC application of the control and responsibility test should be sustained.

(In the August issue of LAND ECONOMICS the author will discuss the interpretation of grandfather rights for contract carriers.—Editor)

⁴¹ Quoting from Carolina Freight Carriers Case, 315 U.S. 475; 86 L.Ed. 971.

Reports and Comments

The Dominance of the Metropolis

THE phenomenon of the modern metropolis has been the subject of many investigations by sociologists, city planners, and others. These studies have been focussed primarily on the history and on the internal structure of the metropolitan area. Much less attention has been paid to its relation to the rest of the country, though it has been evident that there is emerging a new unit, neither "town" nor "country" in the traditional sense, but partaking of elements of both, vaguely called the "metropolitan region," and that such units are drawing into their orbit more and more of the surrounding area, tending to transform all of the territory of industrial nations into a series of contiguous metropolitan "watersheds" or "solar systems," with their "planets," in turn, dominating secondary and tertiary systems. Walter Christaller, a German economist and geographer, has attempted to define these relations for a relatively small area which for many centuries has been densely covered by urban centers.¹ Now an American scholar, Don Bogue, using somewhat different methods, has undertaken a comparable study on the continental scale of the United States with its much younger and more fluid pattern of settlement.² While Christaller, characteristically, proceeds from the smallest centers, the country towns, to progressively larger units, the American author starts from the big metropolitan centers, with only a casual glance at the role of the "subdominant" cities.

Mr. Bogue's study was undertaken under the dual auspices of the University of Michigan's Institute of Human Relations and the Scripps Foundation for Population Research. Its aim is "to determine whether, in the course of their rise to great size, cities which are considered to be metropolitan centers have also become focal points of a much larger entity with a definite pattern or structure . . . the 'Metropolitan Community'." The author adopts the working

hypothesis that this "metropolitan community" is not limited to the immediate surroundings of the metropolis, such as the U. S. Census "Metropolitan District," but extends much farther so that the entire nation can be analyzed as a group of "metropolitan communities," each composed of a dominant "metropolitan center" and a "hinterland" which normally includes "subdominant" hinterland cities, and which is characterized by a typical division of labor between the center and the various portions of the hinterland.

Mr. Bogue selects 67 cities as metropolitan centers. His criteria are first, a minimum size of 100,000 inhabitants—raised to 250,000 in the northeastern states—and, second, a sizable hinterland, excluding large cities in the immediate vicinity of larger ones. The boundaries of the metropolitan communities have been determined by lines drawn perpendicular to straight lines connecting the centers at the midpoints of these connecting lines (with adjustments for political boundaries). The extension of the hinterland is thereby treated as independent of the size of the center—an obviously unrealistic assumption, which, however, would lead to serious distortions only if distances between centers were smaller than the radius of influence. The hinterland of each center is divided, first, into 9 areas delimited by concentric circles from "0-24 miles" to "465 & over," and second, into twelve "sectors" of 30 degrees each. These sectors are broken down into "intermetropolitan" sectors, containing a main highway connecting two metropolitan centers, and others; the others are in turn broken down into those containing cities of 25,000 or more inhabitants, called "subdominant," and the remainder, called "local." However, no such differentiation is made among the "intermetropolitan" sectors, which account for more than half of the total.

¹ Walter Christaller, *Die Zentralen Orte in Süddeutschland*, ed. by Gustav Fischer (Jena: 1933).

² Don J. Bogue, *The Structure of the Metropolitan Community: A Study of Dominance and Subdominance* (Ann Arbor: University of Michigan, 1949), pp. 210.

A number of variables presumably measuring metropolitan dominance have then been tabulated for all communities and analyzed by size of metropolitan center, sector type, distance from center, and size of local community. The variables selected are: density of total population and of urban, rural-non-farm, and farm population, and four "sustenance activities," manufacturing, wholesale trade, retail trade, and services, all based on 1940 census data.

An enormous amount of material has been assembled and a great variety of cross-tabulations have been made, many of them highly significant. Not all of the interesting facts, hidden in the tables, have been brought out. From Table 4-1 (p. 69), for instance, it can be derived that in 1940 no less than 40.9%, 50.9%, and 60.9% of the entire population of the United States lived within 25, 45, and 65 miles, respectively, of the 67 metropolitan centers.

The author's main conclusions are:

- (1) Metropolitan centers dominate their hinterland to the remotest corners of the national territory, as evidenced by a fairly even downward trend of population density.
- (2) Of the four non-extractive sustenance activities, wholesale trade is highly concentrated and retail trade slightly concentrated in the central city; manufacturing is slightly higher in a 65-mile belt surrounding the central city, while services show a gradual decrease as distance from the center increases.
- (3) The fact that these 4 sustenance activities are under-represented in the peripheral areas of the hinterland indicates that the hinterland is dependent on and dominated by the central city.
- (4) The "intermetropolitan" sectors show higher indices than the "local" ones; this is attributed to the inter-metropolitan highways acting as conductors of metropolitan dominance.

Mr. Bogue's conclusions under 3 and 4 appear to be rather dubious. If the peripheral areas show lower-than-average ratios of the four sustenance activities, they may, *pro tanto*, not be supplied at all, rather than being supplied by the metropolitan center; in addition, it is common knowledge that such needs, notably in manufacturing, may be supplied by sources other than the nearest metropolitan center. The hypothesis of metropolitan dominance of even the most distant area is not confirmed by an analysis of the ratio of non-farm to farm population by distance zones from the nearest metropolis,

U. S. 1940 (excluding population of metropolitan center city). The table following is not presented by the author, but can easily be derived from his table 4-3, p. 75.

<i>Distance from Center</i>	<i>Ratio Non-Farm to Farm Population (farm pop. = 100)</i>
0- 24.....	907.5
25- 34.....	361.2
35- 44.....	286.6
45- 64.....	236.7
65-114.....	170.3
115-164.....	114.7
165-264.....	123.2
265 & over.....	169.8

This certainly does not indicate domination beyond 165 miles.

As to the "intermetropolitan" sectors, it must be noted that they are, by definition, a mixture of sectors with and without cities over 25,000; as such, they would be expected to occupy an intermediate position between the "subdominant" and the "local" sectors. This is exactly the position they do occupy and it is neither necessary nor justified to attribute their characteristics to any "intermetropolitan" influence. In addition, as inspection of a map shows, many metropolitan centers in the U.S.A. are lined up along coast lines and river valleys, so that many "intermetropolitan" areas partake of the same locational advantages which gave rise to the development of the centers.

The strange failure of the book to present a map showing the centers and their hinterlands is evidently deliberate, as the book is quite lavishly equipped with graphs and charts. Apparently it was intended that this study should be entirely quantitative, using purely statistical methods, to the exclusion of all geographical considerations. The author states that the number of units, 67, is sufficient to make valid statistical deductions. However, even a cursory inspection of the location of these centers raises serious doubts. Half of all the centers, 33 out of 67, are located within a quadrangle roughly described by its corners at St. Louis, Milwaukee, Boston, and Richmond; these 33 include 12 of the 14 centers with 500,000 or more population, the other two being Los Angeles and San Francisco. Within this quadrangle, distances between centers generally do not exceed 120 miles, so that they are not represented in the data for any concentric zones beyond 115 miles except for a few pieces in the Alleghenies and in the forest

areas near the Canadian border. On the other hand, the greater part of the area at distances from centers ranging from 115 to 265 miles is located in the agricultural South and West; while practically all areas at distances over 265 miles are located in the Mountain States. Thus, in comparing data for various distance zones, the author is actually not comparing the influence of the same center, or group of centers, at smaller and greater distances, but is comparing the characteristics of areas close to the centers of the industrial Northeast with characteristics of areas farther distant from a center in other regions of the U.S.A.! Nowhere in the book is there any indication of the possible distortion of the results due to these regional differences, nor are adequate data presented which would allow to measure their influence. However, inspection of a map indicates that, while 61 of the 67 centers are represented in all zones up to 65 miles, only 48 have any significant share in the areas between circles 65 and 115, only 30 in those between 115 and 165, 24 in those between 165 and 265, and 13 in those beyond 265 miles.

These facts throw a significant light on some other data presented in Mr. Bogue's study. Most variables show a steep decline from the central city outward to a 35-mile circle, and again beyond a 65-mile circle, with a "plateau" in the zone between the 35- to 65-mile distance. The author discusses this phenomenon, but minimizes its importance as temporary. However, as practically the entire area of the industrial Northeast lies within the 65-mile zone, the "plateau" may well represent the pattern characteristic for the entire area, with isolated metropolitan "peaks" rising steeply above this level, without extending their influence much beyond the 35-mile circle. Only the very large metropolitan centers of 500,000 or more population do not show this "plateau," suggesting the desirability of a separate investigation of metropolitan communities "dominated" by these large centers.

The "plateau" hypothesis, tentatively suggested by this reviewer, could be confirmed

or disproved only by analyzing separately the data for each region of the United States. The author does present some data separately for the Northeast, North-Center, South, and West regions. Of these, only the South is about equally well represented in all zones up to 265 miles—and for the South all significant variables remain constant beyond the 35-mile circle!

These data seem to indicate roughly the following picture: the agrarian South is characterized by a relatively even level of population density and of non-extractive sustenance activities; it sustains metropolitan centers from 100,000 to 500,000 population at distances averaging about 200 miles. The industrial Northeast is characterized by a higher level of these characteristics; it sustains metropolitan centers from 250,000 to several millions of population at distances averaging about 100 miles.

The author explicitly rejects the thesis that an area may "sustain" a certain pattern of urban centers. Though he quotes Gras' statement that "interdependence of parts is really the key to the whole thing," his language throughout the study implies a causal relationship between the "dominant" center and the pattern of the hinterland.

This reviewer is not prepared to say that Mr. Bogue's interpretation is wrong or that the alternative hypothesis, as sketched above, is correct. He feels, however, that the data presented by the study are insufficient to decide this question. The number of metropolitan centers is too small and their "habitat" is too varied to make it possible to obtain valid answers by using exclusively methods of statistical analysis. The results obtained by these methods should be correlated with, and tested by, geographic investigations of individual communities. It seems that in this field, as in so many others, genuine progress is dependent on co-operation between various scientific disciplines.

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Hidden Dimensions of Neighborhood Planning[†]

The Function of Neighborhood Planning

NEIGHBORHOOD planning is an attempt to make spatial arrangement subservient to social function. Two different dimensions are involved, the spatial and the social. The multiplicity of social purposes, as a matter of fact, makes it desirable to break down the social dimension. We have neglected to do so in the past. We have tried to force the one-dimensional category of space upon a hierarchical structure of social relations.

In the last analysis, of course, we have to reduce a multitude of social contexts to the flattened plane of physical construction. More than one social dimension is involved. Not to recognize this is to operate by way of foregone conclusions. Empirical observation—if there has been any—has started out by delimiting a contiguous patch of the urban fabric and recording activities sustained in such an area. In this manner, important social dimensions were hidden. Information about other social relations than those now contained within a contiguous residential area has been lost.

Superficial and misleading, indeed, is the thinking of neighborhood planners who force the discussion into a framework where nothing remains but either to acclaim or to disapprove of the desirability of residential propinquity and close neighborhood facilities. The question is raised whether we should have urban neighborhoods or not. Yet, the question is rather what urban facilities should be provided for what service-radius. If the service-radius happens to coincide for several of such facilities, it will be advantageous to integrate them into a unified plan. On the other hand, to start with the assumption that such integration will have to be related to the walking-distance neighborhood, is to operate from a foregone conclusion.

[†] This article is based on a paper which the author read at the annual institute of the Society for Social Research at the University of Chicago, August 1949.

Even the planner's conception of space is often unduly simplified. Space is conceived as a barrier to social contact. This is true only as long as we ignore the possibility of effective means of transportation. If we ignore transportation the problem seems indeed simple. Space, we know, has the remarkable quality of being pre-empted by physical construction. It can be occupied only once. The city planner, then, may proceed on the principle that the distance between different land uses should be inversely related to the frequency of contacts between them. Distance and social function are to be reconciled in such a manner as to minimize time and labor. In this manner it is possible to encourage some and to discourage other intra-urban contacts.

Now, the relationship between space and social contact is not quite as simple as all that. Space presents a barrier to contact, to be sure, but to a certain extent space can be conquered by various means of efficient transportation. Distance should be read, by the city planner, in terms of commuting time. Ordinary, geographical maps do not tell the whole story about the advantages and disadvantages of different planning alternatives. In the perspective of the individual urban resident, commuting facilities distort the geographical outlay of physical construction. Still, not all social contacts are of such a nature as to be accommodated by technical transportation facilities. Urban neighborhood planning, as a matter of fact, has concerned itself largely with activities that shy away from the use of technical means of transportation. They are centered around the activities of young children and the informal relaxation of adults.

This does not imply that neighborhood planning should be entirely and exclusively based upon the assumption that special advantages accrue from the avoidance of other than pedestrian means of transportation in the private life of the city dweller. In the current discussion these advantages are

sought in the primary group contacts so established. It is assumed that such primary group contacts will activate means of informal social control which have held various symptoms of social disorganization at a relatively low level in the American small town.

We do not know and have good reason to doubt that the above assumptions coincide with conditions that are prevailing in fact. We have no clear evidence that informal means of social control in the American small town actually do have a restrictive influence upon deviant behavior such as crime, immorality, etc. We are not sure that the means of enforcement are informal and based upon close residential contacts. Nor do we know for sure that such deviant behavior is actually kept in check; perhaps the non-conforming members of the group migrate to the nearest large city rather than change their behavior. We have no evidence, either, that the informal controls of small-town living can be effectively transferred to a large-city environment. The introduction merely of the elements of residential propinquity and repetitive social contacts does not recreate the relations and social controls which are said to be found in smaller communities.

Some empirical facts have been collected to throw light upon the validity of the customary assumptions underlying our enthusiasm for the neighborhood unit plan.

Neighboring in the Small Town

At closer inspection (based upon an examination of a collection of documentary material) we find that life in the contemporary small community is not nearly as commendable as it will appear in the wishful thinking of those planners who arrive at their image of the small town by way of contrast to urban conditions which they have known to be undesirable. To be sure, on Main Street everybody knows what everybody else does, and what he doesn't know he is not afraid to ask about. We have reason to doubt, however, that it is merely a matter of informal controls. We have reason to doubt that gossip and informal approval or disapproval will suffice in this environment to keep the members of the community "in line."

Documentary materials do not indicate that standards of good conduct are more deeply embedded in the mind of the small town dweller as compared to that of the city slicker. Not by more thorough internaliza-

tion of folkways and mores, but by the brute force of economic pressure, by threats and anxieties, are the denizens of Main Street forced to adhere to standards of which they do not necessarily approve. The high school principal trembles for his job, the minister's son is afraid to behave like any other boy lest he endanger his father's position; and the businessman conforms to local prejudice to retain patronage within the limited range of potential customers. Bonds of mutual economic interdependence achieve the enforcement of those standards of behavior which keep the divorce rate low and curtail the spread of juvenile delinquency.

Deviant behavior has no chance for economic survival in the small town. Nor is there need for deviant behavior in the small town as long as there is the opportunity for migration into the anonymous environment of the nearby metropolis. Residential propinquity and the use of common neighborhood facilities in the large city will not duplicate those conditions which—in the small town—have stemmed the tide of social disorganization.

The lure of the city is felt keenly by the younger residents of the small community. The children's needs for recreational facilities are notoriously ignored by local politicians. The public high school aids temporarily in providing for the recreational needs of the teen-age group. The young married-group, again, is not sufficiently influential to demand consideration. No wonder our small communities see their populations drift away, a well-known tendency which also has to be considered as we avowedly try to duplicate idyllic small-town conditions in our metropolitan environment. When they drift away, as a matter of fact, these small-town dwellers turn their steps towards the large city because it offers a different set of advantages.

In fact, neighboring patterns change with community size. Tentatively, we dare to make the following generalizations: (1) As we move from smaller to larger communities, gossip decreases and so does the importance of gossip as a means of social control. (2) With growing community size both church and school gain in importance as agencies which promote the unity of the community. In certain environments, they seem to fail in this task. (3) Recreational facilities increase and improve with community size. (4)

Speaking acquaintances in the larger communities become both less numerous and less intimate. (5) With increasing city size, taverns tend to lose importance as places of business and centers for social get-togethers. (6) With city size, the tendency grows to identify with a section rather than the entire scope of the community. (7) There is more tolerance in the large city but also less concern for the welfare of neighbors.

These changes, however, are affected by other factors also than mere size of community. The location of an industrial plant in a relatively small community will change the neighboring pattern more incisively than will mere growth in population. Then, as the community grows in size there are other changes in social relations which defy easy quantitative analyses. In the larger communities, leadership is based upon status, economic power and political influence; in the smaller communities it tends to be based on what—due to the lack of better knowledge—we have to call intangibles. Resourcefulness, emotional and intellectual independence as well as the willingness to assist others with their problems, such are leadership qualities that will be rewarded in communities with relatively limited size.

In the small community, the dimension of space is more or less irrelevant to social relations. Space is no barrier when all physical construction is located within easy walking distance. This, of course, is true only for the extreme type. As the community grows in size, spatial relations become relevant to social convenience. Segregation sets in. Spatial arrangements become expressive of social relationships.

Neighboring in the Large City

The study of family contact patterns in the large modern city reveals only too clearly that "neighboring" is not one given thing. (This conclusion is based on a study of records on urban family contacts.) It depends upon definition whether the concept of "neighboring" should include higher education and contacts with voluntary associations, whether it should be confined to casual chats over the back-fence, to visiting, borrowing or friendships. For the empirical scientist, the term "neighborhood" is woefully ambiguous.

The values of neighborhood planning are tied to hopes for the development of neighbor-

hood consciousness. Close identification with the residential neighborhood is expected to promote constructive citizenship and conformity of behavior. What are the facts? What area does the city dweller identify with, and does his behavior promise susceptibility to the purposes of neighborhood planning?

Identification with spatial segments of the large city takes place on different levels. There is consciousness of belonging to one of the large sections of the city which are set off against each other by the general direction of rapid transit lines; they may be referred to as West, East, North and South. In general, these areas are too large to carry status associations. As a matter of fact, they have little importance beyond that of providing a superficial division of the downtown population crowding toward their means of transportation.

On the other extreme, we encounter door-to-door contacts in the immediate vicinity of the individual dwelling unit. Now, the neighborhood that is established on the basis of borrowing, occasional chats, exchange of baby-sitting and nodding acquaintances, takes on a different shape for each individual city dweller. Schematically, it may encompass the right-hand and the left-hand neighbor and the family across the street of every urban family. There are chance variations of the pattern, and the extension of such neighborhood relations is apt to vary with interests and length of residence; yet, by and large, there is no concentric geographical delineation of informal "neighboring." These relations in the city tend to be of extremely superficial character, geared to the lowest possible denominator of every-day routine behavior.

In between the large transportation area and the small area of routine residential contacts, there develops a sense of identification with some sort of a "roving" neighborhood that may be centered around the high school or some shopping district, sometimes delineated by either natural or man-made barriers. Awareness of the "roving" neighborhood must be considered as highly subjective as well as dynamic. Neighborhood consciousness is extended as the grade school child transfers to high school. The influence of the city high school upon neighboring practices, as a matter of fact, is considerable. The high school functions as a leverage point for the elimination or at least temporary

reduction of race and ethnic prejudice. The neighborhood is, at this point, where the high school friends are residentially located.

Without a sharp definition in the mind of the investigator he may stumble into different kinds of neighborhood consciousness. It will pertain either to a large *transportation district*, enveloping the main lines of rapid transit, it may be confined to a *cluster of dwelling units*, in which the superficial routines of private living are shared, or it may extend to the *roving neighborhood* where individuals stray in search of friends, of somewhat specialized recreational activities and for membership in voluntary associations. Each individual will conceive of the roving neighborhood in many different ways according to that segment of activities which temporarily looms in the foreground of his mind. The importance of different activities, of course, changes with age and interests. Responses of the interviewee are apt to be subjective and unreliable. If we break down the vague concept of neighboring into specific activities in order to inquire into their range, we have to consider employment, education, daily and specialty shopping, recreational and associational activities, religious worship and associated activities, medical services, visiting, friendships and door-to-door contacts. These activities, needless to say, spread far and wide. Their spread, however, does not lack regularity.

The range of contacts varies with the location of the family residence in the urban area. From the periphery of the incorporated city, contact patterns shoot in beacon-light fashion toward the central business district. Somewhere along the road toward the city center there may be another dense clustering of contacts. The peripheral city dweller, it seems, may adopt by choice—and guided by the course of transportation facilities—a satellite neighborhood, a roving neighborhood in the above sense yet not related in space to the location of his own residence, a neighborhood in which he makes himself well rooted by voluntary association, the establishment of friendships, participation in educational and school activities, etc.

Residential sections close to the city center, on the other hand, are by no means confined to communication with the business district and the immediate vicinity of the dwelling. To a surprising extent, residents of these central areas adopt outlying satellite neighbor-

hoods upon which they concentrate their patronage, their social life and their participation in voluntary associations. It will seem—although this point needs further empirical verification—that the associational life of the large urban community reaches a relative climax somewhere between the peripheral and the central residential belt. Commercial as well as informal social contacts are attracted to an area that is well developed and yet not exposed to central deterioration and congestion. Residence determines the choice of such adopted neighborhoods only through the main flow of public means of transportation.

The motor-car introduces an element of vagueness in the formation of family contact patterns. With the use of the private motor-car, friends are visited all over the city, but particularly within the suburban belt. For purposes of informal social intercourse, the entire suburban belt appears as an area in which social distance is far from proportionate to geographical distance. Whether due to status differences or otherwise, the suburbanite is—in this manner—more closely associated with other suburbanites; the resident in central location seems less inclined to roam for purposes of informal social contacts.

Planning Concentric Service Areas

The problem of neighborhood planning can perhaps be formulated in a somewhat more articulate manner than has been customary so far. The question is not whether "neighboring" is good or not. The question is rather which family activities are provided for best within a contiguous geographical area and which activities do not demand such provisions. The size of the neighborhood unit, then, will not have to be decided upon by rule of thumb, aiming at that quasi-metaphysical optimum of 5000 persons. Size will be related to the character of shared activities, and what these activities are will not have to be taken for granted. What they are and how they cluster will have to be the object of empirical observation.

Nor do we need an all-out formula for neighborhood planning. On the contrary, neighboring facts and neighborhood needs of different populations in the city are of such a nature as to recommend differentiation in the plan and the physical construction of joint facilities.

The classical neighborhood unit plan will

probably be acceptable for some people and for some parts of the city. It should not, however, be considered more than one of several possible types of clustering of service facilities. Its advantages are dependent upon a rather unique set of conditions. If we overlook the questionable claim to the revival of informal means of social control in the city environment by close human contact in the neighborhood unit, if we ignore the difficulties inherent in the transfer of such constructive influences from the small town to the large city, then the neighborhood plan leaves us with not much more than a small select number of services efficiently geared to an identical size of population. The service radius of these facilities is supposed to overlap, and there remains the problem only of planning the spatial relationship of these different services to each other. Grade school, grocery store, community center, playground and heating plant may be contained within the planned unit; high school, the local movie, medical service, and church are customarily excluded.

With dogmatic assertions aside, the problem of neighborhood planning poses itself in a somewhat different manner than hitherto recognized. We are challenged to establish service areas that are geared to similar population size. If such concentric service areas happen to coincide with some type of "neighboring" or neighborhood consciousness, so much the better.

In the heterogeneous residential areas of the city, there is place for a variety of concentric service areas. There may be need for residential units clustered around the nursery school or supervised—or unsupervised but easily controlled—play areas. Such

neighborhoods, focussed upon the needs of pre-school children, could be combined with central heating facilities and other centralized services, that can be economically operated at limited size, such as cleaning, food preparation, laundry and centralized baby-sitting services. Other concentric service areas might have to encompass a much wider territory. There is place for a "planned neighborhood" that looks toward the local high school as its center. Within such a neighborhood a sizable shopping district, various denominational churches and somewhat specialized recreational facilities and a meeting place for the social life of the residents might well be contained.

Different, again, will be the requirements for the suburban neighborhood with relatively loose social contacts within walking distance but with a demand for outdoor recreational facilities for all age ranges, and a highway system that allows easy motor-traffic to adjacent settlements in the suburban ring.

Such an approach destroys the old vision of a metropolitan area covered by more or less stereotyped neighborhood design. The task will be added of relating different types of concentric service areas toward each other. It will be necessary to contemplate a hierarchy of complementary service areas for the entire city. Thus, our interest should be revived into the functional structure of the modern city as a whole. Neighborhood planning will be absorbed by the wider field of city planning.

SVEND RIEMER

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Book Reviews



Readings on Agricultural Policy. Edited by O. B. Jesness; assembled and published under the sponsorship of the American Farm Economic Association. Philadelphia: The Blakiston Company, 1949. pp. XI, 470. \$4.75.

Agricultural economists have long felt the need of a textbook on agricultural policy suitable for use at the college and university level. At the same time they have realized the near impossibility of preparing a satisfactory text in this subject matter field. The frequent changes in policy legislation—together with the wide range of discretion permitted in the administration of the provisions of the acts would, in all probability, make any treatise of this kind out of date before it ever reached the light of print.

A case in point is the recent repeal, before it became operative, of Title II of the Agricultural Act of 1948. The Act of 1949, which became effective January 1, 1950, is still largely in the interpretative stage. There seems to be little doubt that it will be subject to many amendments, if not to actual replacement by new major enactments. It is far from final.

The American Farm Economic Association after considerable deliberation came to the conclusion that a book of readings on agricultural policy would go a long way in filling the evident need. To be sure, it would be subject to some of the same defects resulting from rapidly changing legislation, but it was felt that such a volume would more than justify the effort and expense, by bringing together between two covers the experiences of past legislation together with an appraisal of policy based upon two decades of experience. In line with this thought the Association made arrangements with a publisher to issue a volume under its sponsorship. *Readings on Agricultural Policy* is the result.

The Association appointed Professor O. B. Jesness of the University of Minnesota as editor. He was assisted by an Advisory Com-

mittee composed of Herrell DeGraff of Cornell University, F. F. Elliott of the Bureau of Agricultural Economics, L. P. Gabbard, Agricultural and Mechanical College of Texas, and H. R. Wellman of the University of California.

The selections were from sixteen sources. They represent the contributions of twenty-two authors and six committees. The material in the volume is arranged under four headings: Part I Background, Part II Price and Production Adjustments, Part III International Trade and Relations, and Part IV Land and Rural People.

As is to be expected, Part II—Price and Production Adjustments, is accorded greater emphasis than is any of the other group topics, from the standpoint of space devoted to it.

Teachers of agricultural policy will welcome the volume since it eliminates, in part at least, the necessity of library assignments covering numerous sources, often not available in sufficient quantities for class use. The general reader attempting to follow agricultural policy matters will find it interesting and helpful. It supplies a basis for a better understanding of the what, where-does-it-lead, and why, of agricultural policy measures.

Teachers and students of land economics will find Part IV, Land and Rural People, of particular interest. Land policy is a vital part of agricultural policy.

Readings on Agricultural Policy is deserving of wide distribution among those who are seriously interested in finding a way out for agriculture which will, at the same time, prove to be to the long-run advantage of the nation as a whole.

ASHER HOBSON

University of Wisconsin



Future Food and Agriculture Policy. By John D. Black and Maxine E. Kiefer. New York: McGraw-Hill Book Co., Inc., 1948. pp. 348. \$3.50.

Future Food and Agriculture Policy's informative and objective analysis is a welcome addi-

tion to current literature on food problems in light of the many food scares and exaggerations promulgated by some neo-Malthusians. As stated on page 1, "This is a book on the food and agricultural problems that face the United States and world in the next ten years." Despite this Herculean assignment, the authors do a remarkable job of carrying out their task. The book is must reading for all students desiring a factual look at food situations and problems and what may be done about them.

The book has four main parts. Part I discusses food, agriculture, and nutrition in the United States and the rest of the world in the early postwar period from which we are now emerging. Part II analyzes "parts of the problem" facing the United States and the world at large. The parts of the problem as seen by the authors include food and population interrelationships, agriculture and the rest of the economy, agricultural instability, conservation of agricultural resources, low-income families, malnourished groups, food needs of the United States and world, food potentials, food targets to be achieved and problems of distribution.

Part III is devoted to food and agricultural programs in the United States and elsewhere. Considerable attention is given to production-consumption adjustments and "balanced" programs for this and other countries.

Part IV deals with execution of programs outlined in Part III. Important roles are suggested for all major groups including producers, consumers, processors and distributors, labor and government.

Each of the parts starts with the United States as a major case study, then proceeds into the problems and situations of other countries. The intra- and inter-country studies are integrated into an international approach to food problems.

Recent developments in nutrition and food uses as well as latest information on food supplies, consumption and diets within various countries are included. Also, the book includes analyses and estimates of food production potentialities of various countries in relation to population density and growth. These factual materials make the book an excellent source of data on food requirements and supplies, both present and potential.

The authors' "balanced food and agricultural program for the United States" anticipated important features of the "Brannan

Plan" in proposing that "the whole crop or output be sold in the regular open markets at whatever price it will bring and that the producer be compensated for the difference between what he gets for his product, as evidenced by bills of sale, and the guaranteed price." (p. 214) This is but one of many features of a comprehensive domestic food and agricultural program outlined by the authors.

Without discounting the importance of international food programs, the authors point out that the solutions of food problems must be worked out in the countries and communities of origin. "But before an international organization can hope to accomplish much in integrating food production, distribution, and consumption among nations, the separate nations must each go a good way in finding out how to accomplish it within its own boundaries." (pp. 1-2) This reasoning rests on the fact that practically all the food consumed in the world comes from the country where it is consumed and much of the food is consumed in the community where produced. "If the food produced and the food consumed locally and within the nation cannot be adjusted in such a way as to achieve well-being for both its producers and its consumers, the chances are slim that this will be accomplished among nations." (p. 2)

Following this reasoning, national food programs should supplement and complement local efforts and international programs should do the same for national efforts. This reasoning appears sound and should help direct the general efforts of FAO and United States-sponsored food programs, including efforts which may evolve out of the President's so-called "Point Four" recommendations.

This book is a singularly important contribution to a better understanding of food and agricultural problems and what may be done about them. It is moderately technical and written primarily for students of food and agriculture. There is still need for a more popular version of such a book to help correct some of the confusions and misconceptions left in the wake of a number of popular works including *Road to Survival* and *Plundered Planet*.

JOHN F. TIMMONS

Iowa State College



Resource Management in North Carolina. By Paul W. Wager and Donald B. Hayman, Chapel Hill, N. C., Institute for Research in Social Science, University of North Carolina, 1947. pp. x, 192.

Safeguarding Kentucky's Natural Resources. By Vera Briscoe, James W. Martin and J. E. Reeves. Lexington, Kentucky, Bureau of Business Research and Bureau of Government Research, University of Kentucky, 1948. pp. x, 224.

Alabama's Heritage. By Joseph M. Ray and Lillian Worley. University, Alabama, Bureau of Public Administration, University of Alabama, 1947. pp. x, 186.

Rescued Earth. By Lee S. Greene, Virginia Holmes Brown and Evan A. Iverson, Knoxville, Tenn., University of Tennessee Press for the Bureau of Public Administration, 1948. pp. x, 204.

Mississippi's Wealth. By Robert Baker High-saw. University, Mississippi, Bureau of Public Administration, University of Mississippi, 1947. pp. x, 190.

South Carolina's Natural Resources. By Christian L. Larsen. Columbia, S. C., University of South Carolina Press, for the Bureau of Public Administration. pp. xi, 211.

These six state surveys were conducted by members of the bureaus of public administration in their state universities under a cooperative program. In the Alabama survey the objectives of all these reports were thus described:

"The study will be concerned with the organization and management of the activities and operation of public agencies charged with responsibilities for protecting, conserving, developing, and utilizing lands, forests, minerals, water, wild-life, and scenic resources. The study as projected does not contemplate an inventory of the South's natural resources. Such an inventory, while important, must be left to other hands. The emphasis here will be on administration." (page 1)

The authors have fulfilled the tasks assigned to them in a workmanlike and competent manner. They covered methodically the list of subjects enumerated above.

The North Carolina report of Professors Wager and Hayman begins like a great epic. The conflict between individualism and social control is dramatically set forth. (p. 2)

"Men have always had one dream above all others—to be rid of poverty. Here in a new country, with abundant resources and an economic system which promised each person an equal chance, it seemed possible to achieve this dream. Wealth came more easily than ever before in all history, and to many it became an obsession. In the production of wealth the sources from which it came seemed to be forgotten; men took from the earth without giving back. The liquidation of capital was mistaken for income. The inheritance of the ages was appropriated by individuals. Social rights and benefits were forgotten or ignored."

Unfortunately this opening pace was not maintained, due perhaps to the nature of the material. The volumes do not stir the imagination of the economist or the planner. They serve a useful function in recording the history of the states' first efforts at conservation, but are not designed to show the effect of methods of utilizing natural resources upon the income of the states or the welfare of their citizens. These reports, however, are contributions in the field of public administration and should not be criticized for not being monographs in land economics.

Economic surveys of states and regions are vitally needed now to point out how the real income of their citizens can be raised. Such studies must show how each region can develop these industries in which it has an economic advantage as compared with other regions. In selecting problems for future studies, universities might really probe the subject of land economics to its depths and make contributions to both the theory and the practice of land utilization.

HOMER HOYT

Larchmont, N. Y.



Automotive Transportation: Trends and Problems. By Wilfred Owens. Washington, D. C.: The Brookings Institution, 1949. pp. 148. \$2.00.

In the process of becoming an essential item in our economy the automobile has created problems in many fields. Most of these problems stem from the fact that we have so many cars or, more precisely, the fact that we acquired so many cars in such a short time. The very beginnings of the automobile age are within the lifetime of a substantial proportion of our people. Prob-

ably thirty years would cover the period since we began to recognize that the automobile was here to stay.

Thirty years is simply not long enough to produce the adjustments required to the new order of things produced by such a wealth of low-cost, universally-demanded transportation.

While creating so many problems in so many fields, the automobile, by its own success has become a problem to itself. Improved design and better engineering have resulted in longer life. Longer life has meant lowered cost. Lower cost has meant more owners. More owners have resulted in congested streets and roads. Congestion has meant lost time, higher operating costs, inconvenience, accidents. Thus has success created failure—failure to provide the kind of easy, low cost travel which produced success in the first place.

Wilfred Owens has succeeded admirably in tracing the development of the problem and in suggesting some means for coping with it. The book is primarily an argument for more adequate highways and better traffic administration on the grounds of economy. Far from being an added cost to the motorist, the author shows why good highways and well-regulated traffic actually lower the cost of car operation even when the cost of the roads is added to the bill.

To the statistically minded, the book should be fascinating. It contains an extraordinary number of statistical facts—so many indeed, that one occasionally wonders whether greater weight for some of the points might not have been attained by mere statement. Nevertheless, the array of statistics and the many

references to source authorities are impressive.

There are two sections to the book. The first is devoted to the history of car operating costs. We start with a several-thousand-dollar price tag on some of the early cars, go through the three- or four-hundred-dollar era of the Model T to the present two-thousand-dollar "low price group." We consider the effect of values of used cars on the depreciation item; we explore the current talk about a new thousand-dollar car and examine the possibilities of lowered cost by changes in design. Gasoline cost and the tire costs are dissected and the point made that good highways mean lower gasoline consumption, better tire mileage and less car depreciation.

This serves as a bridge to the discussion of the Highway Problem—the effect of congested traffic on car operating costs. Here, there is much food for thought—if you want to think in terms of billions.

The compelling conclusion is that we are paying for good roads, whether we have them or not.

H. H. GEDDES

Detroit, Michigan

Cooperative Housing. A bibliography compiled in the Library of the Housing and Home Finance Agency, Washington, D. C. and available free on request. References have been selected mainly from English Language Material published since 1942. Includes literature on Denmark, England, France, Holland, Norway, Sweden, Switzerland, and the United States.